CHNOLOGY DEPT

Gas Journal

VOL. 276. 105TH YEAR. LONDON, NOVEMBER 11, 1953. NO. 4719. PRICE 1/3

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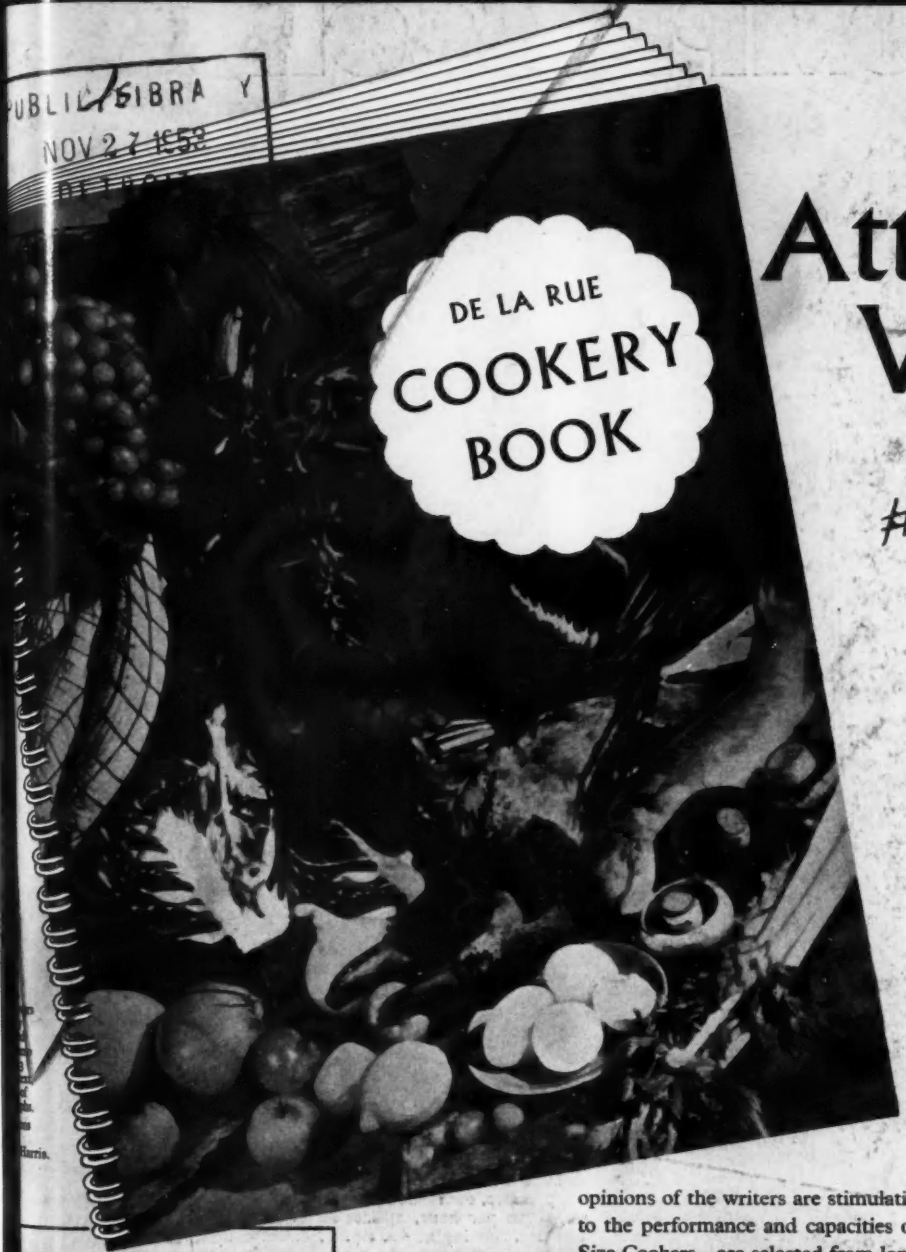

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SUMMARY OF CONTENTS

Soups and Sauces	by Ambrose Heath
Fish	„ Elizabeth Craig
Meat	„ Jean Conil
Vegetables	„ Gretel Beer
Snacks	„ Frances Dale
Cakes and Pastries	„ Marguerite Patten
Sweets	„ Rosemary Hume
Preserving	by Mrs. Arthur Webb

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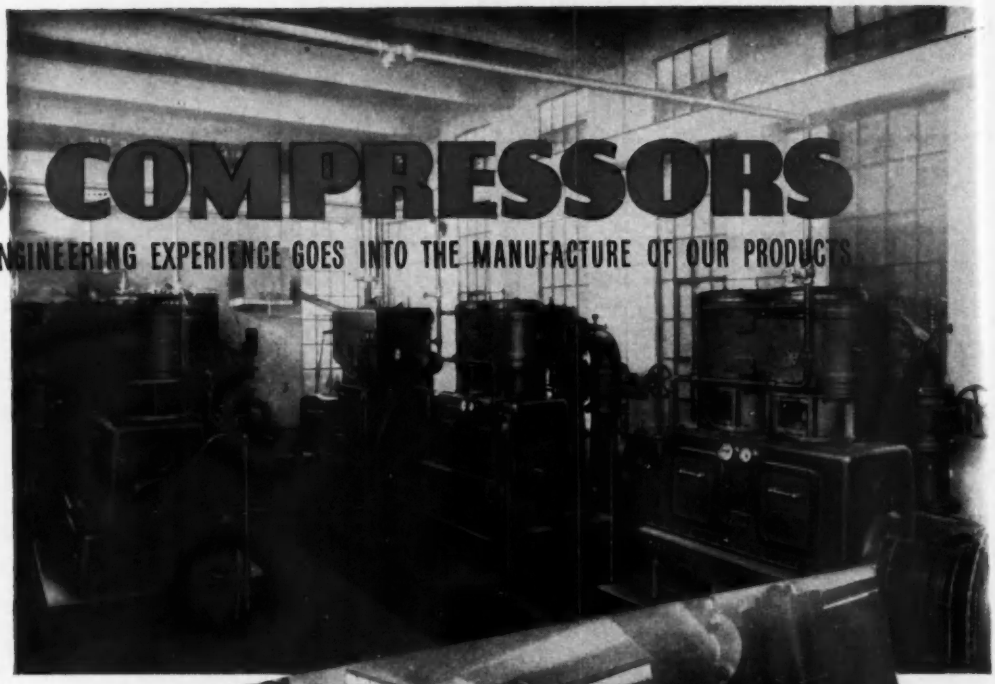

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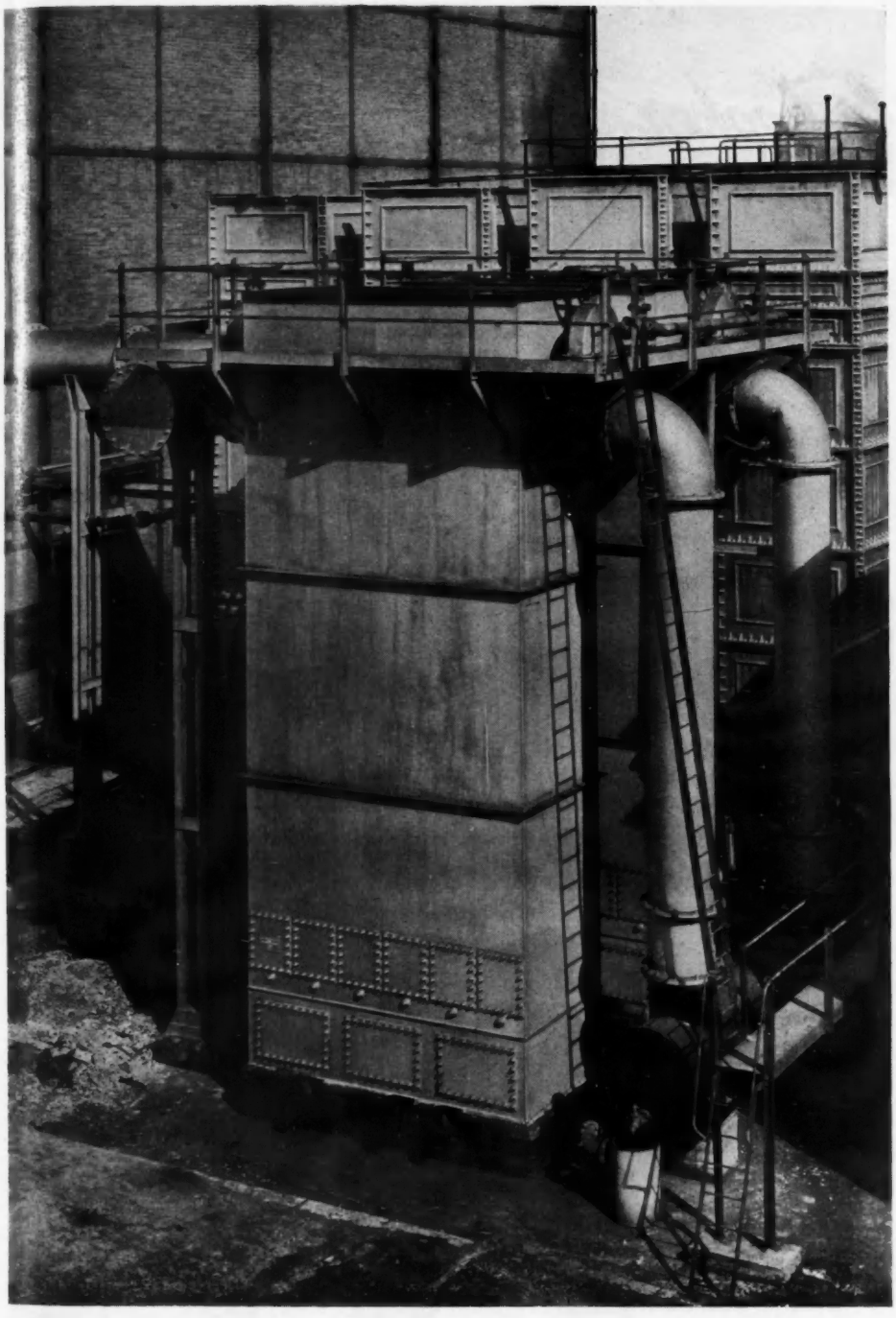

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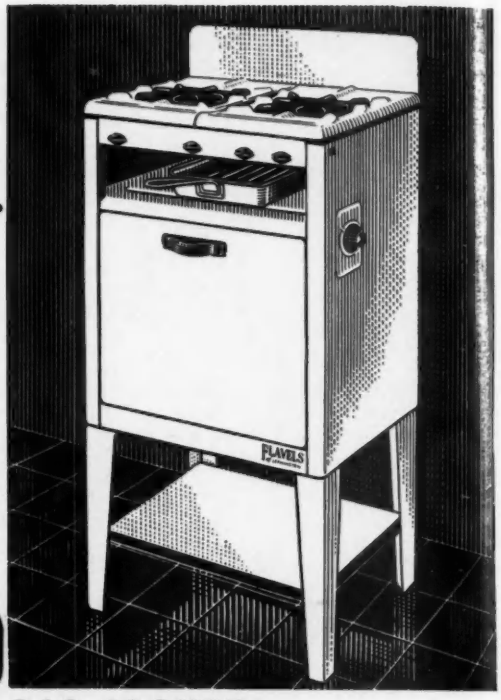

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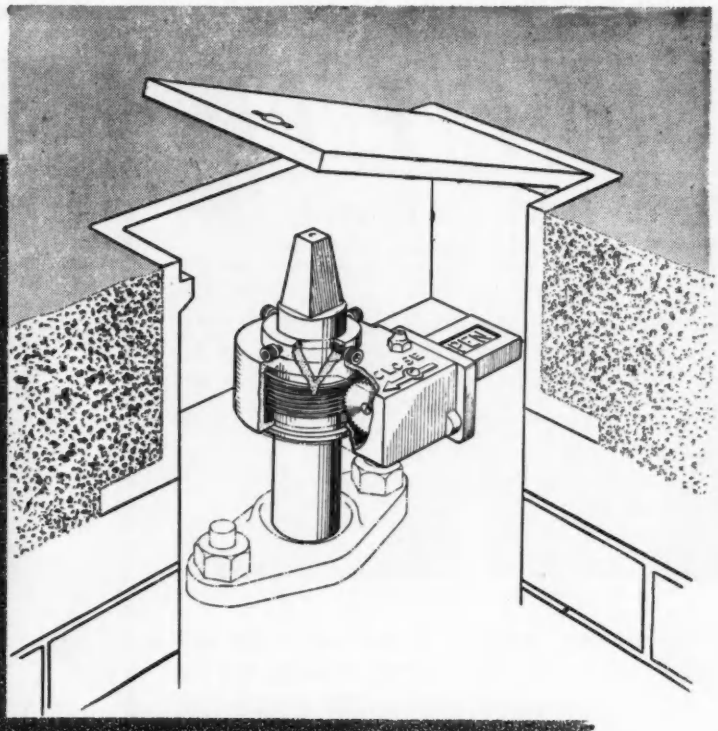

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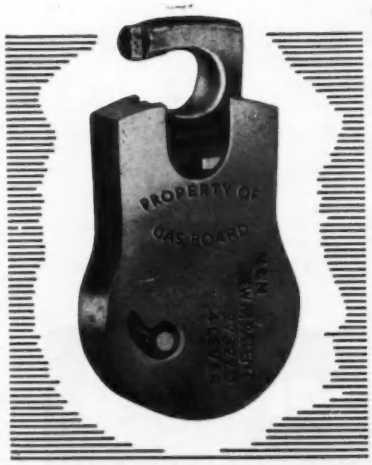

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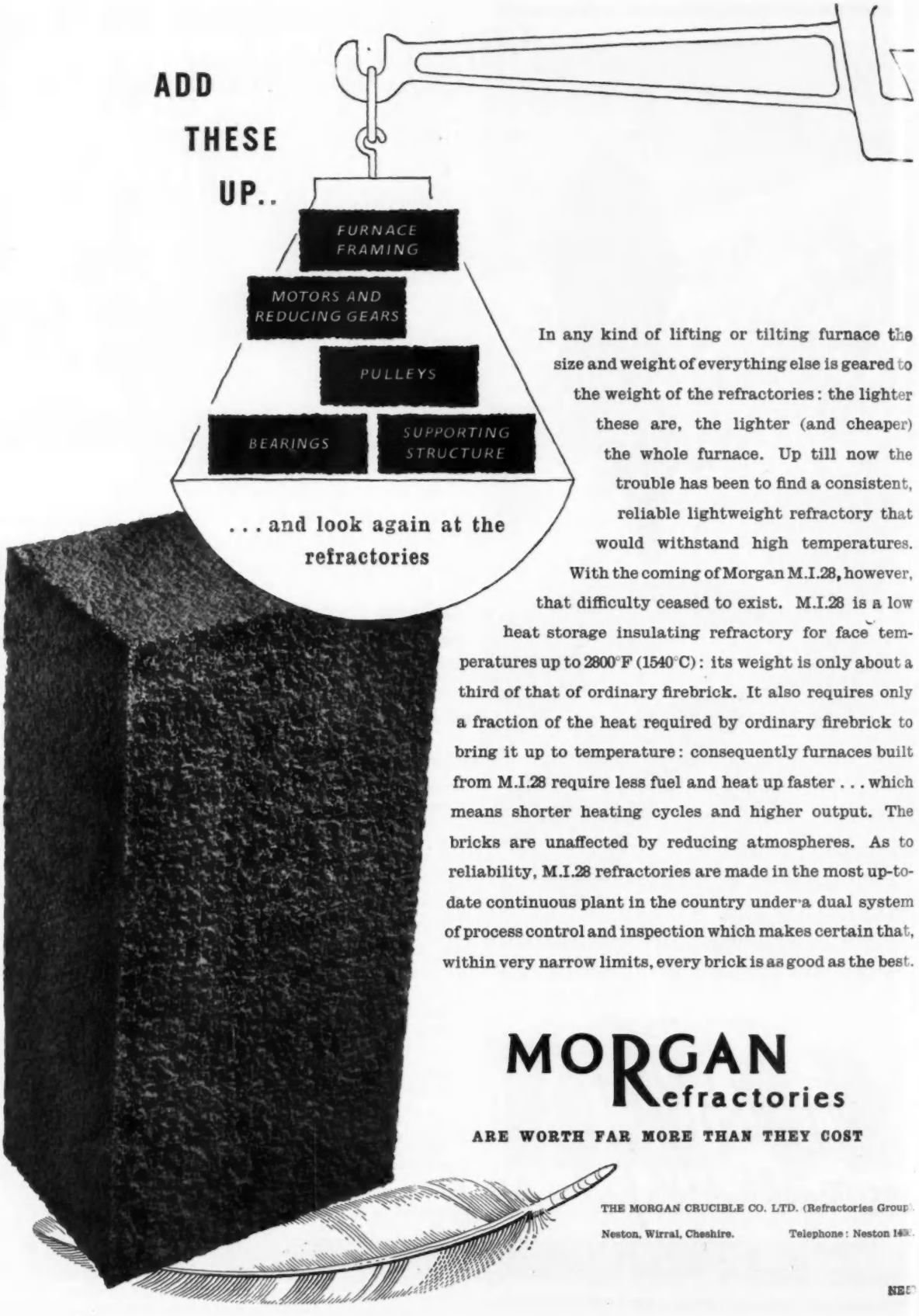

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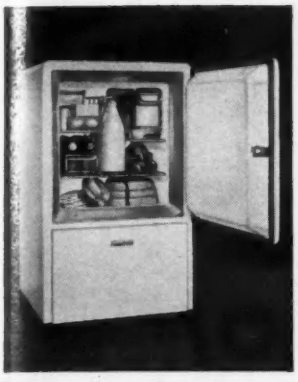

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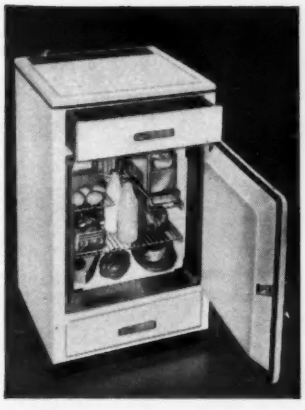

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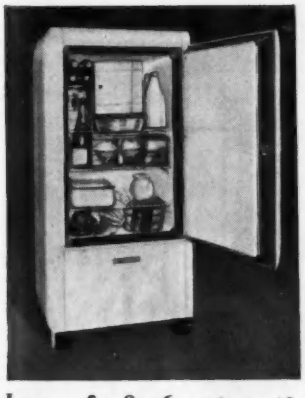

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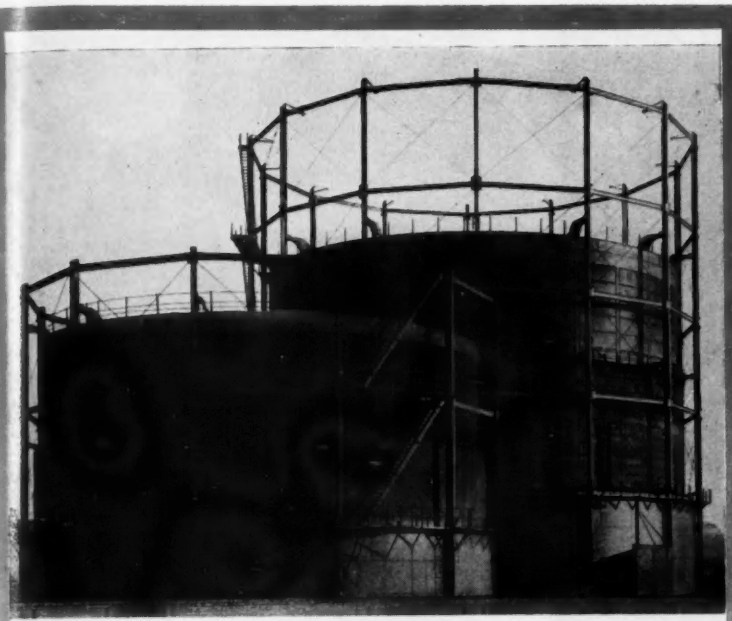

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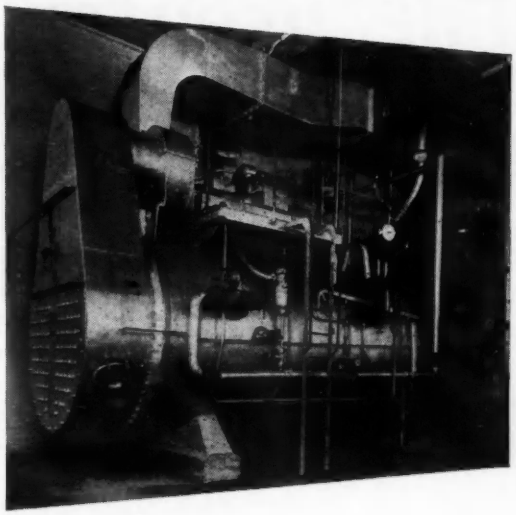

The illustration shows one of the Six Waste Heat Boilers installed at the Howdon-on-Tyne Gasworks—Northern Gas Board. Photograph by courtesy of Messrs. Gas Chambers & Coke Ovens Ltd.

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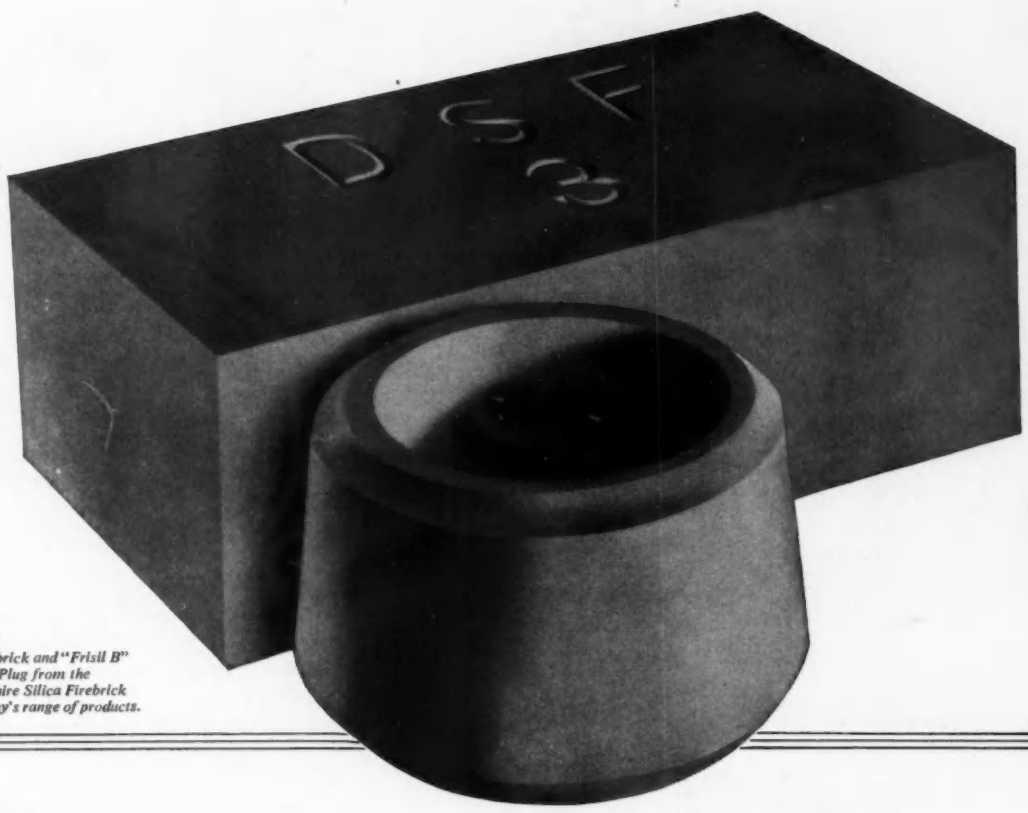

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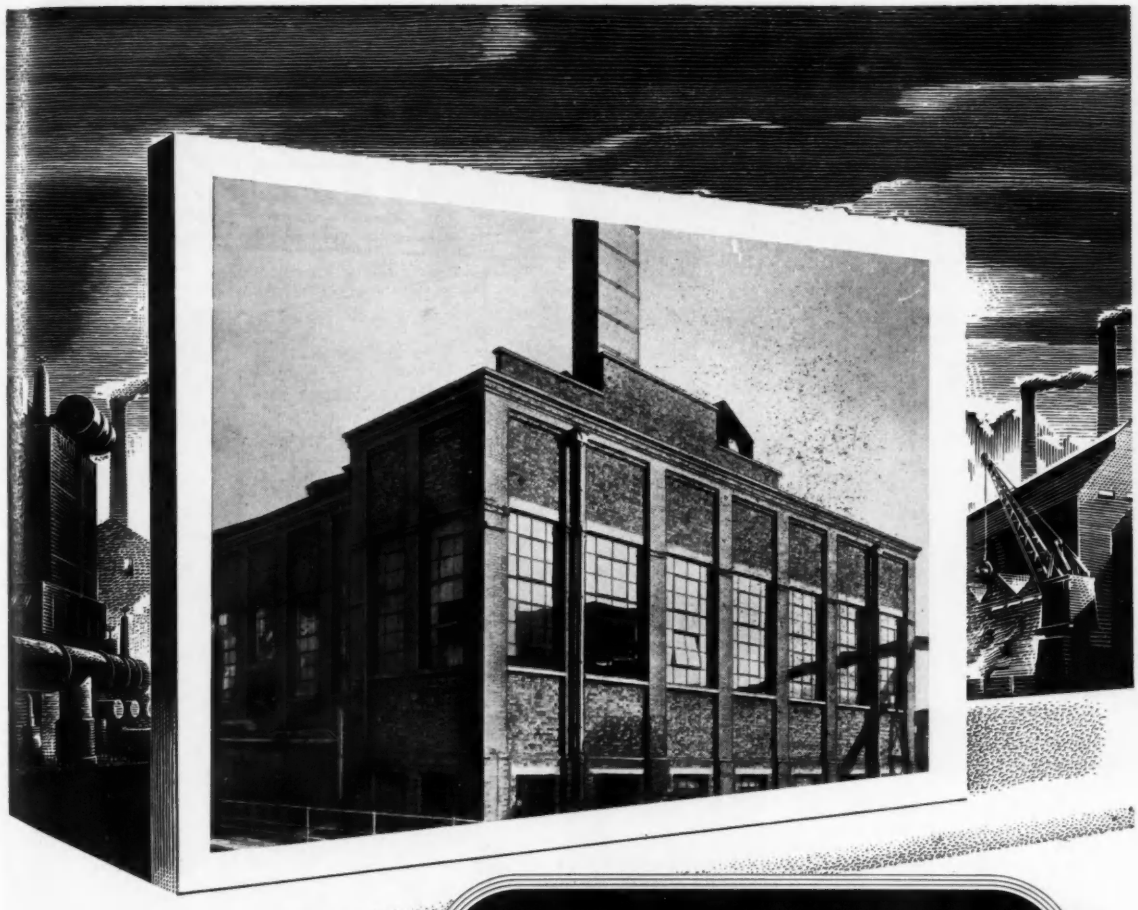

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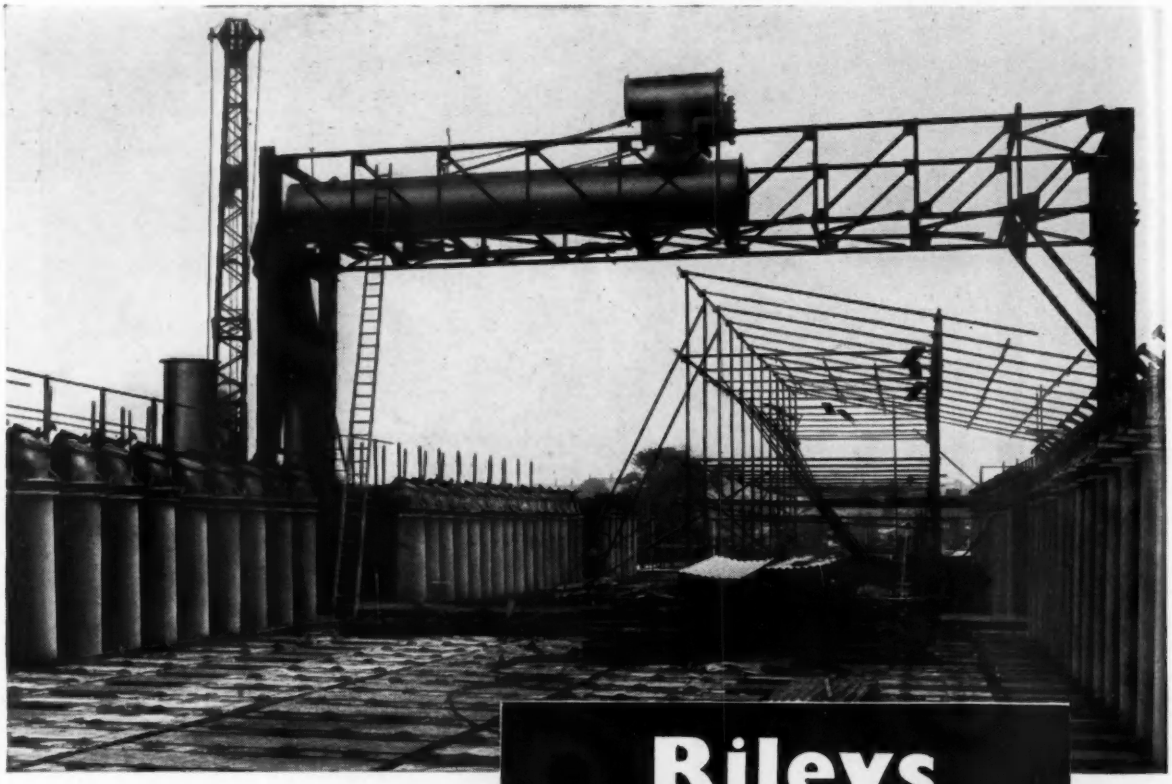

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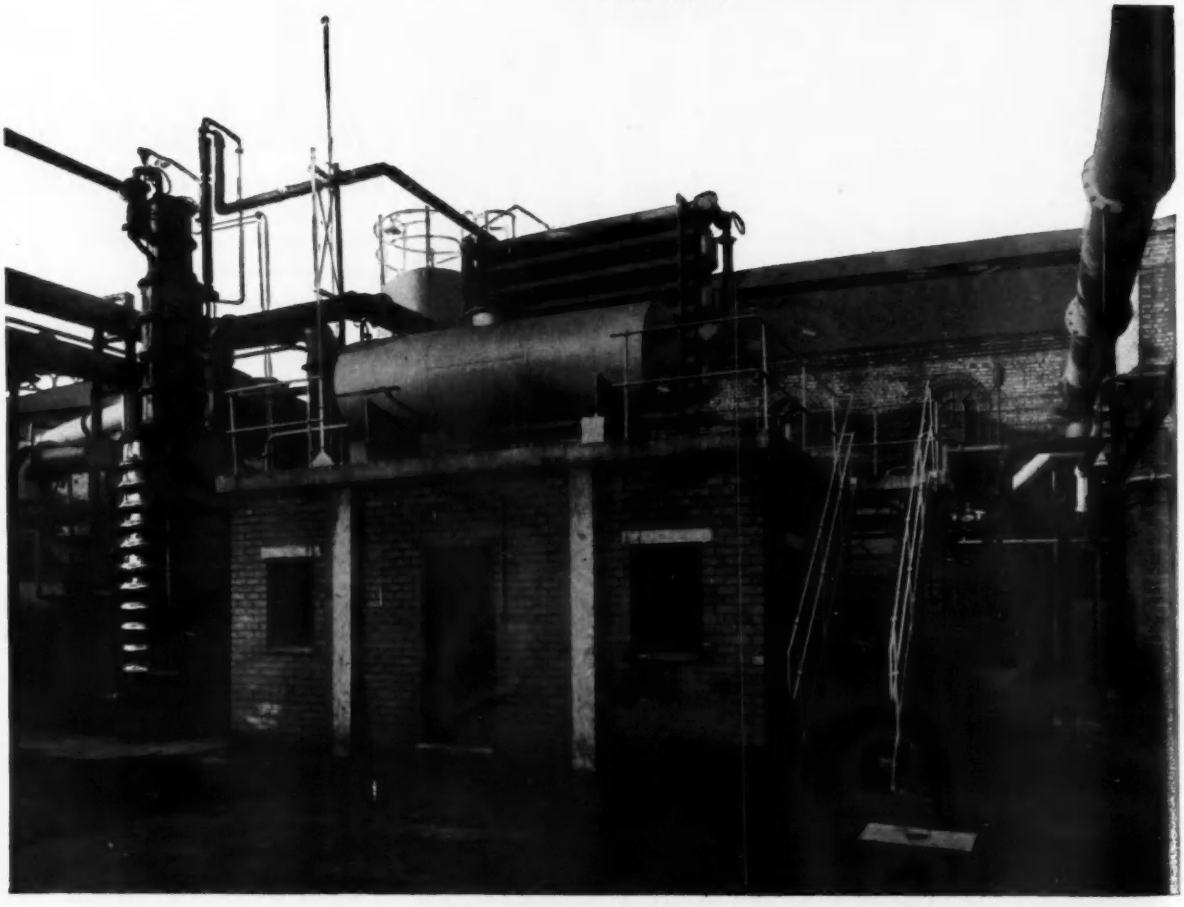

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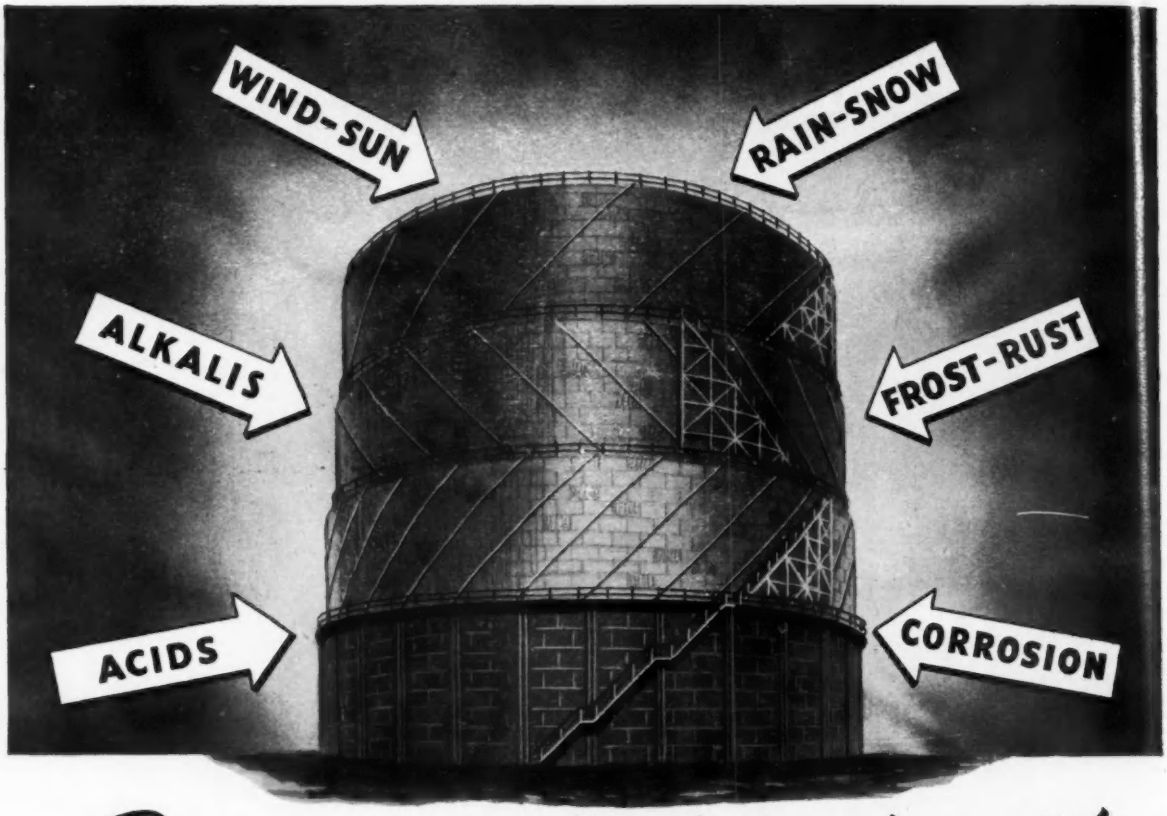

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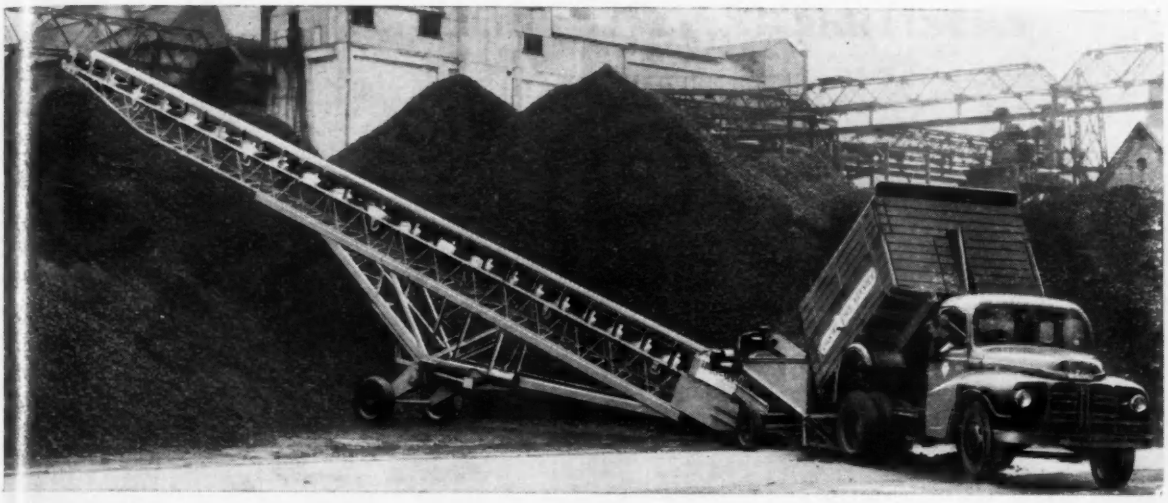

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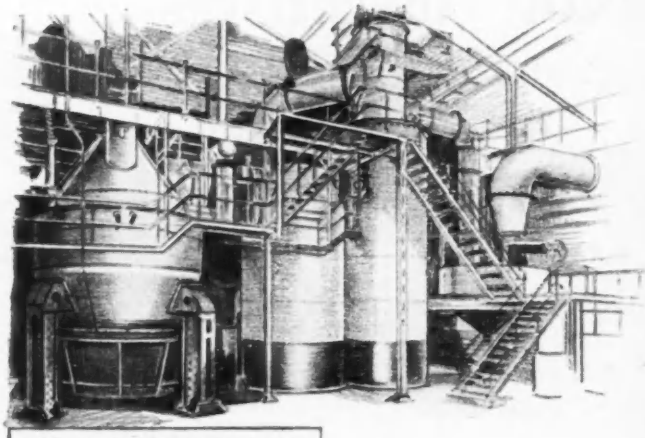

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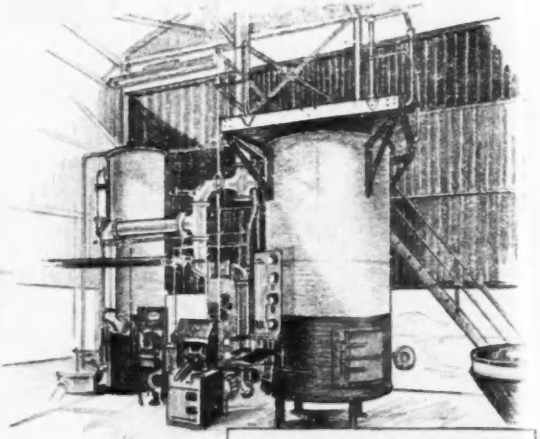

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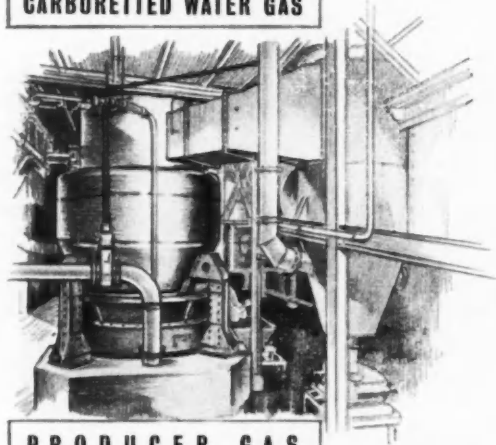

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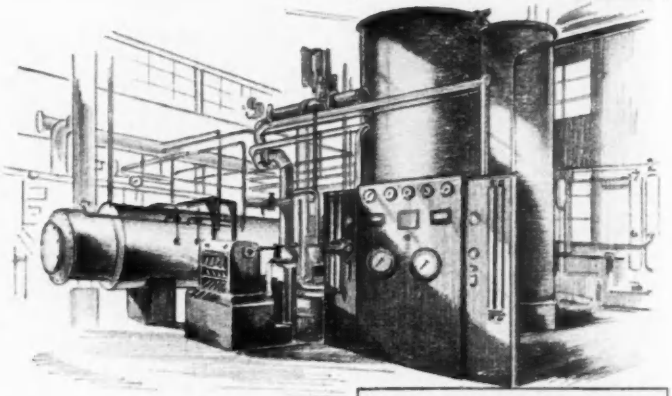

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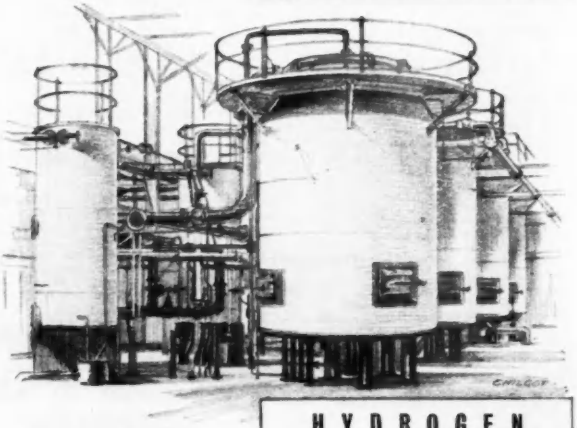

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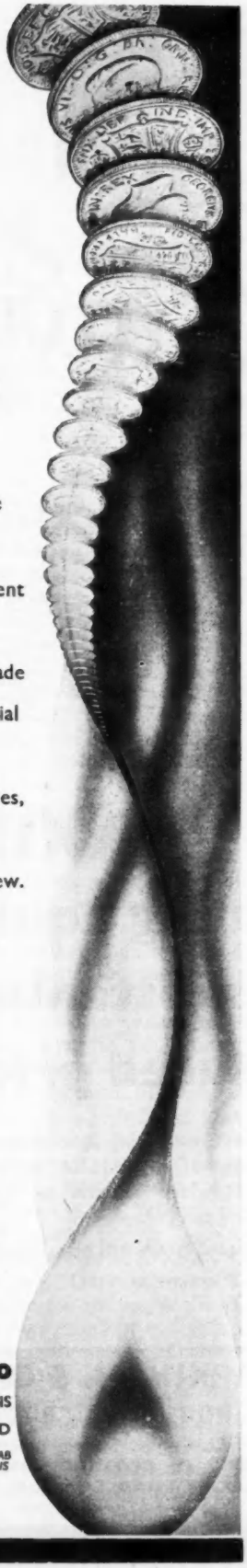

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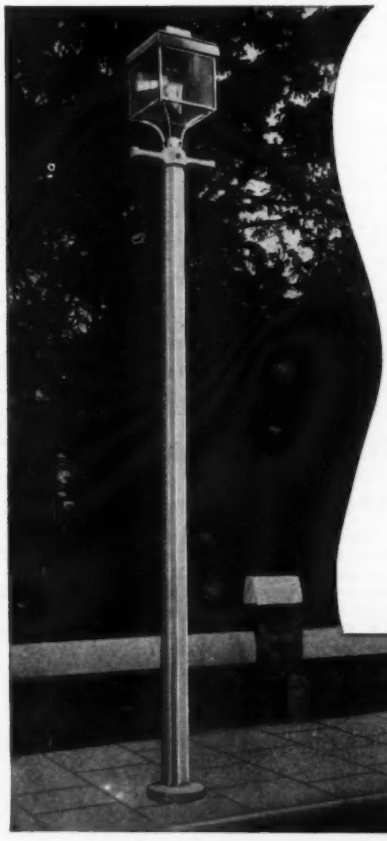

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GAS JOURNAL

VOL. 276. No. 4719 105TH YEAR November 11, 1953

OPPORTUNITY

Manchester with its twin city Salford, their suburbs, and satellites form one vast conurbation which presented a wonderful opportunity for an integration of gas manufacture and supply rendered at last possible of achievement by the incidence of nationalisation. In the excellent paper he presented on October 30 to the Manchester District Section Mr. John Wilson, General Manager of the Manchester Group of the North Western Gas Board, describes in a most interesting way the present set-up of the Group and at the same time calls attention to some of the more glaring anomalies which existed before vesting day.

It is well known that the fine new works at Partington were conceived in an atmosphere in which amalgamation with Stretford, lying largely between Partington and Manchester, was contemplated with some confidence—a project defeated by a misconceived local patriotism. Mr. Wilson tells us that at Partington some 500 tons of coke per day were being manufactured while the nearest customer in the Manchester side was 10 miles away, a vehicle having actually to pass through either the Stretford, Salford, or Altrincham areas before making a delivery and while customers in the Partington area itself were registered for coke at Altrincham. He might also have pilloried the arrangement by which gas from Partington was transmitted in a 36-in. main to the Gaythorn works of Manchester, passing through the Stretford district without serving a customer, 'though this main subsequently proved to be of great value in the ultimate interlinkage.' To quote Mr. Wilson's title and his conclusion, 'to adopt, adapt, improve' with the willing co-operation of a well-organised and happily led staff, was the General Manager's 'Opportunity.'

It was indeed unfortunate that the opening of the new works at Partington, of which only the first two units of gas-making plant, one of horizontals and one of continuous verticals, were then in operation, coincided with the beginning of the disastrous slump of the early 30's. The first effect of the slump was to halt development, as well it might with annual gas sales in Manchester alone falling from 7,200 mill. cu.ft. to 5,800 mill. cu.ft. The sudden demands of the Second World War found Manchester very ill-prepared. The only extension found possible during the war was that of three beds of verticals at Rochdale Road. Obsolete plant had to be brought back into production and pressure cuts became the order of the day, particularly, of course, in the winter.

The organisation of carbonising control is very interesting. At the head of the area is the Production Engineer, then a Group Carbonising Assistant. At each works there is a Carbonising Superintendent working under the Station Engineer but in direct contact with the Group Carbonising Assistant. The final step is significant. In some of the larger Manchester works there are as many as five different retort houses 'and we went a step further and put into each retort house a carbonising assistant—responsible for the efficient working of that house alone.' These carbonising assistants are mostly student gas engineers, serving in the retort house in the final period of their pupilage with considerable previous experience of laboratory work and ancillary plant control. We can imagine no better training for the student gas engineer and no more effective way of achieving optimum results in the retort house.

The results themselves are presented in broad outline only and for a complete appraisal more information would be required. Possibly the position of Rochdale Road at the head of the list for efficiency and at the foot for net cost into holder is due to working under base load conditions. But it is significant that Salford stands next and that at both these works gas is made wholly or largely in the continuous vertical retort. At any rate it will indeed be agreed that the organisation introduced by Mr. Wilson has resulted in efficiencies and economies which more than justify the small increase in technical staff, especially as this increase takes the form of an incomparable training of the future junior technician.

Training and education is dismissed in a section of modest length; but we think this is one of the most promising features of the Manchester Group organisation, reflecting great credit on its General Manager. All through this paper shines the evidence of his personal interest in and concern for the welfare and training of every grade of personnel. 'We feel a definite obligation towards these pupils and their education is carefully planned.' That might be adopted as an over-riding law throughout the industry. There are not many words in

the section under 'Training and Education,' but every one counts.

When we come to distribution and interlinkage we see the hand of the Board and its Chief Technical and Planning Officer. Mr. W. Hodkinson had made a name for himself in the study and organisation of the gas grid before he came to this important position. The point is that the interlinkage in the Manchester Group has been carried out with the larger view of interlinkage with all the adjacent groups and with distribution throughout the area fully in mind. Only so can integration come to full fruition.

Under the heading of 'Sales and Services' we sense again that warm personal note which runs through the paper. The appointment of the district service officer in control of each centre is an excellent idea. Nothing is more likely to secure the contented consumer than knowledge of some known official to whom he can apply for personal attention to his requirements, for advice in the selection of appliances, and for assistance in his troubles. He is in every sense of the word the 'gas manager' for his own district. We just wonder what steps are taken to make him personally known to his 'parishioners.' If that were done there would be a restoration of the personal contact between the consumer and Mr. G. A. Service, one of the features of the old regime which tends to get lost in integration and centralisation. Is this arrangement sufficiently publicised in the districts?

The final note is welfare and a contented staff. Mr. Wilson's conclusion is in every way admirable. It is so evident that he enjoys working with a staff, happy and interested in their job, no 'yes' men but encouraged in constructive criticism, whose suggestions are met with the breadth of sympathetic understanding. He will be known as one whose success is measured largely by the humanitarian aspect of his endeavours.

SMOKELESS ZONES AND SMOKELESS FUEL

Whether we like it or not, remarked Commander Colin Buist in an address to the Coal Industry Society last week, smokeless zones have come to stay; their number and areas must increase year by year. We learn that the General Purposes Committee of the St. Pancras Borough Council is considering the establishment of an experimental smokeless zone of one square mile. This would be the first to be established in a London borough.

The Court of Common Council of the City of London agreed at last Thursday's meeting to seek powers to make the whole City, with some exceptions, a smokeless zone. Captain Alfred Instone expressed alarm that some time would have to elapse before the powers sought could be put into effect. He asked if the Corporation had received any guidance or information from the Government committee of enquiry into fogs. Sir Cullum Welch, chairman of the Special Committee making the recommendation, replied that the Corporation had not as yet received any assistance or advice. Regarding the open fireplace, Commander Buist commented that it is not the open fireplace which causes the smoke, but the bituminous coal which is fed to it. What we need is more solid smokeless fuel.

It was strongly argued in a joint paper by Commander Buist and Messrs. J. O. Cooke, E. J. David, and H. H. Prosser at last month's conference of the National Smoke Abatement Society that it should be possible to make available 10 mill. tons of solid smokeless fuel of all kinds for the domestic market by 1957 and that this amount could be increased by 1962 to a total of 15 mill. tons. The authors pointed out that they had in mind the provision of solid smokeless fuel only for those really black spots in which smoke is a very serious menace to both life and property. They were thinking about the Greater London area, the Black Country, South Lancashire, the West Riding of Yorkshire, and the Clyde, Tyne, and Tees. It is estimated that if all the domestic coal burned in these areas had to be replaced ton for ton by solid smokeless fuels the quantity required would be of the order of 13 mill. tons—a production figure within the reach of the smokeless fuel industries on, say, a 10-year plan.

NEW COKE MARKETING SCHEME

On this subject of solid smokeless fuel we learn with the liveliest interest that the Minister of Fuel and Power has approved a new coke marketing scheme for the South of England submitted by the Eastern, North Thames, South Eastern, and South Western Gas Boards. The scheme, we understand, is designed to provide a simplified price structure and an improved service to all types of consumer. In the area covered by the scheme there are at present in operation over 200 price schedules based on the former gas undertakings' areas. Extra charges are made for sized coke, and contract prices depend on annual tonnage taken. In future, maximum gas coke prices (approved by the Minister as part of the scheme) will be the same over wide zones, whatever size of coke is supplied, and no matter from what source. Prices within a zone will vary only in so far as it is necessary to compensate for costs in relation to the size of delivery which the buyer is willing and able to take at one time, the geography of the zone, and regularity of business.

It has been found possible to reduce the number of zones to 18, to cover the whole of the South of England. In doing this the Gas Boards have endeavoured so to arrange the new prices that although there will be some increases in some areas and decreases in others, coke users as a body will not pay more. To achieve improved service the Boards will each appoint authorised distributors who will undertake to reach an agreed standard of consumer service, and to provide the Board with facilities for distributing its coke.

'A NATIONAL DISASTER'

The movement towards smoke abatement is growing apace. Last week a resolution expressing anxiety at the possibility of a recurrence of last December's fog in London, and alarm 'at the lack of any effective response from official quarters to what can truthfully be described as a national disaster,' was passed last week by the Local Medical Committee for the County of London—a statutory body set up under the National Health Act to represent the 6,000 doctors in Greater London. Immediate action by the Government to prevent a repetition of that disaster was demanded in the resolution. The fog last December directly caused the deaths of over 4,000 persons in Greater London and serious illness—not recorded in the returns of notifiable disease—to tens of thousands more. The fog also 'flung an unnecessary strain on the public health and general medical services of the capital, disrupted communications and ambulance services, and prevented doctors from reaching patients who urgently needed them.'

Fog disasters hold their peril. How much is 'smog' caused by filthy coal—'nutty slack' or any other burnable substance dressed in words to appear decent? Speaking recently at a meeting of the Institute of Fuel, Sir Ernest Smith, a Past-President of the Institute, and, of course, known to a vast majority of our readers, commented how he had been impressed by the large sales—

more than a million in the last year or two—of 'improved' open fires. Most of them have been sold with the approval of the Ministry of Fuel and Power; that is because they had been shown by official tests to be more efficient when working on smokeless fuels. But the great bulk of these grates are being used today to burn raw coal. The absurdity of a year ago, of recommending their use for burning nutty slack, in spite of the need for smoke abatement and fuel efficiency, is intolerable. Tests have shown that it is no more economical to burn coal in such grates than to burn it in the old-fashioned open fire, and greater forcefulness is needed on the part of the powers-that-be to support the type of equipment (when available) which is known to be more efficient in the burning of coal than was the old type of grate. There are, of course, two reasons why the 'improved' grate does not save coal. One is that it is too deep and the other is that the householder welcomes a grate which will keep the fire in all night. These reasons are no answer to the 'smog' menace.

FAREWELL TO AUSTERITY

Ration books, queues, and culinary frustration were conjured up at Newcastle recently when the figure of Miss Austerity arrived on stage at the Old Assembly Rooms, complete with bicycle, sausages, and an air of determination, to the strains of 'One Meat Ball.' Fortunately, before she had got very far with her demonstration of rissole-making, this nightmare figure—we refer to the implication rather than the appearance of this disguised home service adviser—was chased off by her colleagues, who in turn demonstrated more exciting, yet inexpensive, dishes from various countries. It was all part of the Northern Gas Board's policy of giving the chief officials of womens' organisations in the area a preview of the type of demonstration which can be included in the programmes of the branch organisations for the coming season. 'Goodbye Austerity,' as this demonstration was called, is an excellent idea, emphasising as it does the wide range of foodstuffs now available in retail shops, and we are not surprised to learn that the 400 ladies who saw it, representing some 200 organisations, have booked the demonstration for a large number of branches; indeed, one group secretary made a block booking of 28 for her various branches. Newcastle would seem to have the ideal recipe for successful demonstration—the courage to introduce a little comedy into their programme, and an appreciation of the glamour attaching to overseas cooking methods. In our view this novel demonstration does more than illustrate the passing of austerity on the food front. It symbolises a release from the dull days of austerity in the gas industry, and indicates how much more lively these activities *must* become if we are to maintain the housewives' affection for the fuel we have to offer.

FRENCH FUEL RESOURCES

In a paper given on November 5 to the Institute of Fuel M. J. Couture, Charbonnages de France, explained that France is not well provided with fuel and power resources and consequently has to import nearly all the petroleum products and a large proportion of the coal consumed within her borders. Only hydraulic power is comparatively plentiful. Power consumption per head of the population is small and strenuous efforts are being directed to utilising the available resources to the best advantage by the extension of prospecting for petroleum in Metropolitan France and the French Union and the refining of crude oil imported into France. Another attack lies in increasing the home production of coal and development of methods of utilisation of 'secondary' products, included among which, of course, is gas. In point of fact increase in gas consumption between 1938 and 1952 amounted to 45%. Output of coking coals in France is low, and it has been necessary to use these chiefly for the manufacture of metallurgical coke, which explains the guiding principles followed during recent years by the gas industry. Newly constructed ovens at pitheads and at iron and steel works have been systematically equipped for heating by producer gas or blast-furnace gas. In step with this gas distribution grids are being extended, a noteworthy achievement in this connection being a feeder main more than 240 miles in length now under construction with the object of supplying the Paris area from the coke ovens of Lorraine and the Saar. The total length of the feeders of Gaz de France has doubled during the last five years. Regarding the production of what may be termed 'orthodox' town gas, progress is being made in the progressive elimination of small works. The interlinking grid is supplied either through large gasworks or by propane and propane-air installations. Coke ovens are being increasingly installed. Gaz de France had 548 gasworks operating in 1947; the number is now only 372. Among these are 31 producing more than 350 mill. cu.ft. of gas a year, and their aggregate production represents 78% of the total output of Gaz de France.

SERVING 25 MILLION HOUSEHOLDS

That is almost true now of the American gas industry, as the report of the American Gas Association for the second quarter of 1953 shows. All classes of consumers, sales, and revenues increased during the three-month period compared with the second quarter of 1952. Consumers now total 26.2 mill., and the industrial category again experienced the most significant advances, both in sales (14%) and revenues (21.8%). Residential and commercial sales gained 6.8% and 7.2% respectively. Revenue increases generally exceeded percentage advances in sales because of the increasing proportions of natural gas sold in States remote from the producing areas, the increasing reliance upon supplies obtained from newer and more expensive pipelines, and increases in natural gas field prices and other operating expenses. The number of consumers receiving gas service on June 30 of this year was 900,000 greater than at this date in 1952. In regard to manufactured and 'fixed' gas, customers, sales, and revenues registered declines in all classes of service. This represents a continuation of declines occurring in previous periods and is due primarily to conversions from manufactured or 'mixed gas' to natural gas.

Glancing at the figures relating to the 12 months ended June 30 last we see that here again the largest increase in sales occurred in the industrial market, a matter of 12%. Residential sales were 5.4% higher and commercial sales advanced 5.6%. An interesting feature of the latest report of the A.G.A. is that all sales statistics are now being expressed in therms rather than in cubic feet, thus recognising the greater usefulness of thermal data for analytical purposes. The presentation of statistics measured in therms permits, for the first time, the valid summation of sales data for all types of gas into one total for the American gas industry.

THE Chancellor of the Exchequer has informed the Ministerial Council of the Organisation for European Economic Co-operation that the British Government has decided to introduce before the end of this year further measures of import liberalisation. These new measures will enable the U.K. to comply with the general obligation of all member countries of the O.E.E.C. to free from quantitative restriction 75% of their imports on private account from other member countries. This step has been taken in view of the importance attached by the British Government to maintaining intra-European trade at the highest possible level. Details of the proposed new measures will be announced shortly, together with other particulars of the arrangements for imports from member countries during the first half of 1954.

Personal Notes

GAS COUNCIL RESEARCH SCHOLARS

NAMES have been announced of the first five graduates to be awarded research scholarships in chemistry and chemical engineering established this year by the Gas Council. Two of the graduates have chosen to study at Oxford, two at London, and one at Birmingham. Successful entrants were:

ALFRED PENNELL, B.SC. (University of Birmingham, Department of Chemical Engineering): selective absorption of hydrogen sulphide from mixtures of gases.

ALASTAIR R. FAIRBURN, B.SC. (Imperial College, University of London, Department of Chemical Engineering): flame spectra.

CRISPIN J. S. M. SIMPSON, B.A. (University of Oxford, Department of Inorganic Chemistry): (a) theoretical calculations relating to problems of molecular structure; (b) combustion reactions, both in closed vessels isothermally, and also in flames.

JOHN S. A. BRUNSKILL, B.A. (University of Oxford, Department of Organic Chemistry): synthesis of isomeric pyridines up to $C_8H_{11}N$, and study of their properties, especially infra red absorption, basic strength, and characteristic reactivity.

GRAHAM B. DARLING, B.SC. (ENG.) (University College, London, Department of Chemical Engineering): investigation of the effect of mechanically induced pulsations on fluid film heat transfer coefficients.

MR. J. HEWIT, Assistant Superintendent of the Mains Department of the Edinburgh Division, Scottish Gas Board, was entertained by colleagues on the occasion of his retirement and presented with a wrist watch. Mr. G. COX, Deputy Divisional Controller, made the presentation, and Mr. J. R. Denoon, Distribution Superintendent for the Division, was also present.

SIR JOHN GREAVES, C.B.E., has joined the Board of Ransomes Sims and Jefferies. Sir John is Managing Director of Davey Paxman & Co., and a Director of Ruston and Hornsby. MR. G. PAWLYN has been appointed Deputy Chairman of Ransomes Sims and Jefferies. He succeeds MR. J. H. W. PAWLYN, who has decided to give up that post, but will remain a Director of the Company.

DR. C. J. T. CRONSHAW, of Prestwich, Lancashire, has been appointed by the Minister of Fuel and Power to be a part-time member of the North Western Gas Board. Dr. Cronshaw is a company director and a former director of Imperial Chemical Industries, Ltd. He is a past Vice-President of the Society of Chemical Industry and a member of the Court of Governors of Victoria University.

MR. J. MORLEY has resigned from the position of Chairman of Meters, Ltd., while retaining his seat on the Board. MR. V. A. B. HUGHES, M.I.MECH.E., has been appointed to the Board and has taken up the position of Chairman. Mr. Hughes is also a Director of the Chloride Electrical Storage Co., Ltd., Chairman of Arundel, Coulthard & Co., Ltd., and Longlands Mill Co. (Stalybridge) Ltd., and holds several other directorships.

MR. W. L. M. O'CONNOR, a Director of Imperial Continental Gas Association (which is principally a holding company), has joined the Board of the Calor Gas Holding Company.

MR. FRANK GREATHEAD, technical assistant with the Northern Gas Board at Consett, has received a presentation from his colleagues on leaving to take up an appointment as operating engineer with W. J. Jenkins & Co., Ltd., Retford.

MR. CLIFTON WYVER has retired from the position of Engineer and Manager of the Denbigh undertaking of the Wales Gas Board after serving the industry for 50 years. Mr. O. P. Cronshaw, Chairman of the Clwyd and Deeside Group, in making a presentation at the monthly meeting of the Group, paid tribute to the long service Mr. Wyver had given to the gas industry. Mr. Wyver also holds the position of Water Engineer and Manager and Director of the Denbigh Waterworks Company, which position he retains on his retirement from the gas industry. He commenced training as a gas engineer under his father in East Kent, and moved to Stoke as junior technical assistant in 1908. In 1917 Mr. Wyver was appointed Gas and Water Engineer and Manager to the Denbigh Gas and Water Company, and has this year completed 36 years service in that position.

MR. E. G. HAMLYN, who has been a Northern District Engineer for the Bryan Donkin Co., Ltd., since 1908, retired on September 30. He joined the company in 1901. Mr. Hamlyn, whose territory included Eire, and at one time Scotland, is well-known and respected as a sound mechanical engineer by numerous gas engineers and coke oven managers of today and between the two wars.

Obituary

MR. THOMAS B. ARMITAGE died at Bristol on November 6 after a short illness at the age of 66. A native of Dewsbury (Yorks.) he was engaged for many years in gas distribution at Aldershot, Swansea, and Cheltenham where he was Distribution Engineer before joining the staff of the Parkinson Stove Co., Ltd., in 1932. His duties as West of England Manager then took him to Bristol. An ASSOC.M.INST.GAS E., he was the inaugural President of the Wales and Monmouthshire Junior Gas Association in 1922 and held similar office in the Western Juniors in 1928. He was fortunate to have a wealth of friends in the industry. He leaves a widow and two sons, Stanley, who is on the staff of Parkinson and Cowan, Ltd. (Gas Meter Division) and Thomas Peter Armitage.

Diary

Nov. 11.—MANCHESTER JUNIORS: Visits to Drakes, Ltd., and J. Morton, Ltd., Halifax.

Nov. 12.—YORKSHIRE JUNIORS: Visit to North Gawber Colliery, near Barnsley, followed by tea at Miners' Welfare Centre.

Nov. 12.—LONDON JUNIORS: Visit to Crane, Ltd., Ipswich, leaving Liverpool Street 8.20 a.m.

Nov. 16.—EASTERN G.C.C.: Connaught Rooms, Great Queen Street, W.C.2, 2 p.m.

Nov. 17.—WALES AND MON. JUNIORS: Full day meeting, 'Resuscitation and First Aid in the Gas Industry,' R. H. Hanford; visit to Abbey Steel Works, Port Talbot.

Nov. 17.—LONDON AND SOUTHERN SECTION, I.G.E.: 'Some Aspects of an Employment Policy,' R. N. B. D. Bruce, Staff Controller, North Thames Gas Board, 17, Grosvenor Crescent, 2.40 p.m.

Nov. 18-Dec. 2.—BUILDING EXHIBITION, Olympia. Gas Council exhibit.

Nov. 18.—WESTERN JUNIORS: Visit to E. Cockey & Sons, Ltd., Garston Works, Frome, followed by film and paper on the erection of a 300,000 cu.ft. holder at Tavistock.

Nov. 19.—EASTERN JUNIORS: 'Measuring Instruments,' C. E. Hammond, Technical Adviser, Walker, Crosweller & Co., Ltd., March, Cambs.

Nov. 19.—WALES JUNIORS (NORTH): 'Resuscitation and First Aid in the Gas Industry,' R. H. Hanford, at Penmaenmawr.

Nov. 20.—NORTH OF ENGLAND SECTION, I.G.E.: Visit to Parkfield Works (new site) of Ashmore, Benson, Pease & Co., Ltd., 11 a.m.; luncheon; afternoon session, 'Some Aspects of Gasholder Construction and Operation,' N. Broadbent and J. A. Walton.

Nov. 26.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Dec. 2.—SOUTH WESTERN SECTION, I.G.E.: Joint meeting with South Western Section, Institution of Civil Engineers, Bristol, inspection of Stapleton Road works, 11 a.m.; meeting 2.30 p.m.; paper, 'Erection of Reinforced Concrete Tank for 6 mill. cu.ft. all-welded Gasholder,' Eales and Turner, of A. Monk & Co., Warrington.

Dec. 2.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

Dec. 4.—LONDON JUNIORS: Annual Reception and Dance, Caxton Hall, St. James's Park.

Dec. 5.—SCOTTISH JUNIORS: Joint meeting of Eastern and Western Districts, 'Coke Preparation and the Gas Engineer,' H. S. Hughes, Scottish Gas Board, at Edinburgh.

Dec. 7.—WEST MIDLANDS G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.15 p.m.

Dec. 7-11.—SMITHFIELD SHOW, Earls Court. Gas Council exhibit.

Dec. 9.—LONDON JUNIORS: Visit to Hackbridge & Hewittic Electric Co., Walton-on-Thames.

Dec. 9.—MANCHESTER JUNIORS: Visit to A. V. Roe & Co., Ltd., Aircraft Works; 'Industrial Gas,' J. Palmer (Liverpool).

Yorkshire Juniors Jubilee

TO CELEBRATE the occasion of its Jubilee, the Yorkshire Junior Gas Association held a Dinner in the Hotel Metropole, Leeds, on Friday evening, October 30. The distinguished company included the President of the Institution, Mr. J. T. Haynes, the Secretary of the Institution, Dr. Braunholtz, Mr. Sydney Smith, Chairman, East Midlands Gas Board, Mr. G. E. Currier, Immediate Past President, Institution of Gas Engineers, Mr. A. K. Collinge, Chairman, and Mr. A. McDonald, Immediate Past Chairman of the Manchester Section, Mr. L. G. Townsend, Chairman of the British Junior Gas Associations' Joint Council, Mr. J. A. Tomes, President, Midland Juniors, and many others representing Junior and Senior Associations. The Yorkshire Juniors were particularly pleased to have with them Mr. E. J. Sutcliffe, the second President of their Association.

During the evening the company were entertained by Mr. F. Beaumont, baritone, who was accompanied at the piano by Mr. F. Sutcliffe. Mr. A. McDonald also entertained with his very professional illusions.

Mr. J. T. HAYNES, proposing the toast of the evening, said:

One of the privileges of being the President of the Institution of Gas Engineers is to visit one's colleagues and to express to them the good wishes of the Institution. It is particularly gratifying when one can do this to an association of 'Juniors.' To be asked to do so on the occasion of a Jubilee Celebration is not only a privilege, it is also a very great honour—especially for a Lancastrian.

Efforts Crowned

The Yorkshire Junior Gas Association is nearly as old as my own Association—the Manchesters. It was founded in 1903 and it has had much the same experience. The members had to meet in private houses and the Association was not favourably looked upon by the engineers and managers of those early days. The recognition now given by the area boards to all the Junior Associations is a measure of the distance you have travelled, and I know you all will join me in paying tribute to our predecessors.

The Yorkshire Juniors draws members from a large number of closely adjacent undertakings in industrial areas, while a few must travel considerable distances to attend the meetings. Yorkshiremen are traditionally hard headed and perhaps face their problems a little more seriously than do their colleagues on the other side of the Pennines, but this celebration is a witness to the success which has crowned your efforts. Your Association has been the training ground for many eminent men who have left their mark on the great British gas industry—I would mention particularly Mr. Butterfield, Mr. Sutcliffe, whom we are so pleased to see here tonight, Mr. Lister Cooper, and others who were all at one time or another members. They received ideas and information, they were taught the art of mixing with their fellows, and they learned to express themselves in open discussion.

A Boy's Enthusiasm

Many engineers now holding high positions in the industry today—for example, C. H. Chester, Chairman of the South Western Gas Board, Sydney Smith, Chairman of the East Midlands Gas Board, G. E. Currier, Deputy Chairman, and Alex. McDonald, Member, of the North Eastern Board, and others have passed through your ranks, and I know they would wish me to express to you their appreciation of all that the Association has meant to them. They also hope that many of you now in the early stages of your training, will succeed in reaching equally great heights. Training for the gas industry is not all technical—culture and art are equally essential if a man is to be successful and happy in his profession. Above all, he must have enthusiasm—the enthusiasm of the small boy who wants to be an engine driver. Never mind who owns the engine, he just wants the thrill of driving it. That same thrill can be won every day by any young gas engineer who is able to effect the saving of even a fraction of a penny in, say, the operation and control of a set of purifiers, or who by constant attention succeeds in reducing the tar acids in the works effluent. It can be done, and there are many opportunities, for the man who can keep this enthusiasm and get such thrills will not have to look for promotion—it will come looking for him. Furthermore, no organisation, however altruistic its motives, can take the place of a man's enthusiasm for his job.

Standards Rise

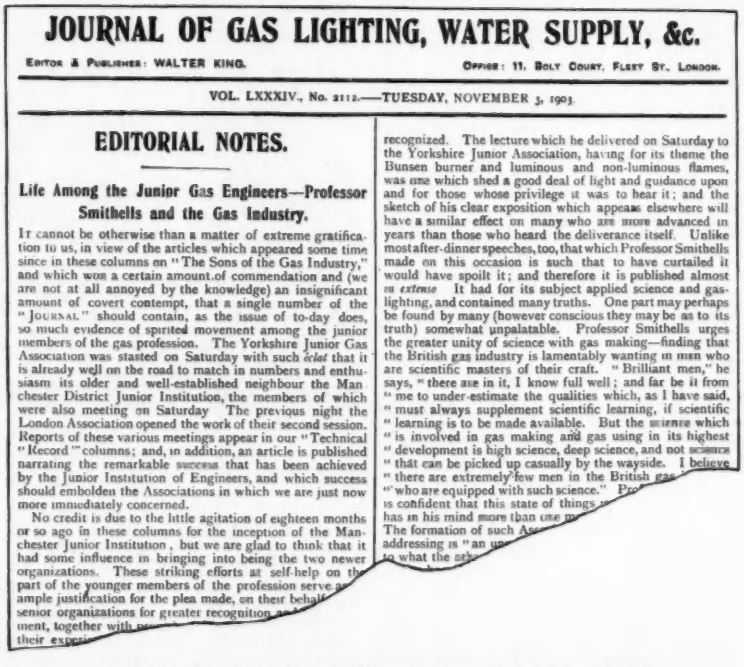
Mr. Cole, it is hardly necessary for me to point out that, as the years go by, the standards required of a President get higher and more difficult, but no doubt your predecessor of 50 years ago, Mr. Cranfield, would have claimed that standards are only relative, and the honour was just as great then, as it is now. By the unanimous acclamation of all your fellows, you have been selected as worthy of this high honour, and in the name of all your colleagues in the Institution of Gas Engineers I offer you congratulations and good wishes, and I express the hope that just as you have every reason to be proud of the Yorkshire Junior Gas Association, so at the end of your year of office the Association will have every reason to be proud of you.

Mr. A. COLE, responding, offered a very cordial welcome to all the guests and friends of the Yorkshire Juniors. Viewing the immeasurably greater service given by the parent body, the Institution of Gas Engineers, 50 years did not appear a long time. The history of the Juniors had been beset by many problems, but these were, in fact, the same as those of their predecessors.

Three Aims

The gas industry had, during its lifetime, endeavoured to fulfil three aims: To give an efficient, cheap heat service on tap to the public; to give good working conditions to its employees; and to provide a reasonable return on the capital invested in the industry by the small savers of the country.

The latter two conditions did not directly affect the Yorkshire Juniors, although it was worthy of note that no industry had been more free of industrial troubles than theirs. Likewise, no industry could claim to have more conscientiously fulfilled its obligations to the investors who had had faith in it; but the technicians in the industry, represented there by the Yorkshire Junior Gas Association, were directly concerned with the provision of a cheap and efficient fuel. During the last 15 years the price of coal had increased by well over 200%, and yet the price of gas, despite the many extravagant claims to the contrary, had increased by only 75%. Wise administration and the development and improvement of the techniques of gas production



JOURNAL OF GAS LIGHTING, WATER SUPPLY, &c.

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EDITORIAL NOTES.

Life Among the Junior Gas Engineers—Professor Smithells and the Gas Industry.

IT cannot be otherwise than a matter of extreme gratification to us, in view of the articles which appeared some time since in these columns on "The Sons of the Gas Industry," and which won a certain amount of commendation and (we are not at all annoyed by the knowledge) an insignificant amount of covert contempt, that a single number of the "JOURNAL" should contain, as the issue of to-day does, so much evidence of spirited movement among the junior members of the gas profession. The Yorkshire Junior Gas Association was started on Saturday with such *eclat* that it is already well on the road to match in numbers and enthusiasm its older and well-established neighbour the Manchester District Junior Institution, the members of which were also meeting on Saturday. The previous night the London Association opened the work of their second session. Reports of these various meetings appear in our "Technical Record" columns; and, in addition, an article is published narrating the remarkable success that has been achieved by the Junior Institution of Engineers, and which success should embolden the Associations in which we are just now more immediately concerned.

No credit is due to the little agitation of eighteen months or so ago in these columns for the inception of the Manchester Junior Institution, but we are glad to think that it had some influence in bringing into being the two newer organizations. These striking efforts at self-help on the part of the younger members of the profession serve an ample justification for the plea made, on their behalf, to senior organizations for greater recognition, etc., etc., ment, together with [illegible] their experience

recognized. The lecture which he delivered on Saturday to the Yorkshire Junior Association, having for its theme the Bunsen burner and luminous and non-luminous flames, was one which shed a good deal of light and guidance upon and for those whose privilege it was to hear it; and the sketch of his clear exposition which appears elsewhere will have a similar effect on many who are more advanced in years than those who heard the deliverance itself. Unlike most after-dinner speeches, too, that which Professor Smithells made on this occasion is such that to have curtailed it would have spoilt it; and therefore it is published almost *in extenso*. It had for its subject applied science and gas-lighting, and contained many truths. One part may perhaps be found by many (however conscious they may be as to its truth) somewhat unpalatable. Professor Smithells urges the greater unity of science with gas making—finding that the British gas industry is lamentably wanting in men who are scientific masters of their craft. "Brilliant men," he says, "there are in it, I know full well; and far be it from "me to under-estimate the qualities which, as I have said, "must always supplement scientific learning, if scientific "learning is to be made available. But the science which "is involved in gas making and gas using in its highest "development is high science, deep science, and not science "that can be picked up casually by the wayside. I believe "there are extremely few men in the British gas [illegible] "who are equipped with such science." Pro[illegible] is confident that this state of things [illegible] has in his mind more than one m[illegible] The formation of such A[illegible] addressing is "an u[illegible] to what the [illegible]

'A Measure of the Distance you have Travelled'

at all levels within the industry had undoubtedly contributed to that.

Mr. Haynes in his remarks had mentioned some of the problems that beset the industry 50 years ago. Today, in an endeavour to cheapen the price of fuel and maintain an efficient service, equally great problems beset all of them. The announcement by the Chairman of the Gas Council of the intention of the industry to prospect for underground sources of natural gas was another indication of revolutionary advances. Their friends in Wales had already taken many steps towards the use of methane gas extracted from the Point of Ayr Colliery. Equally important with the problem of producing cheaper gas was the problem of distributing it. Transport, whether of gas in pipes or coal on railways, was in the lifeblood of any country, and the development of some of the gas grids in this country was important. Mention should be made of the famous South Yorkshire grid, and the North Eastern Gas Board's West Yorkshire grid. Development of both was taking place rapidly.

Fifty years ago the founders of the Association were some ten in number. They now had a membership 25 times greater, and as technicians under the guidance of the parent Institution, they felt that they could go forward as public servants and in the public interest.

Mr. F. H. NICHOLLS (York), proposing the toast of the guests, said the gas boards had made things easier for the Juniors; they had given something to the Associations without which they would have been poorer. It was a great advantage that their Association covered more than one board, and they were pleased to have representatives present from the East Midlands. He welcomed Mr. Sydney Smith and Mr. C. C. Wood, and said the Association felt honoured that they were to continue their celebrations by visiting the Rotherham Works the following day.

Mr. L. G. TOWNSEND suitably responded.

A vote of thanks to the President of the Yorkshire Juniors, the guests, and to those who had provided the entertainment during the evening, was moved by Mr. R. E. White.

ROTHERHAM VISIT

On the following day the Association visited the Car House Works, Rotherham, at the invitation of the East Midlands Gas Board. Tea was served after the inspection, and Mr. Sydney Smith (Chairman, E.M.G.B.) took the opportunity of addressing the visitors in welcome, prefacing his remarks with regret at the absence of his Deputy, Mr. E. H. Harman, who was indisposed, and who had been, in fact, responsible for the planning of the Car House Works during the time that he was General Manager of the Sheffield and Rotherham Division.

Mr. SMITH said it was more than 35 years since he first became a member of the Yorkshire Juniors, and in those days he was a junior in every sense of the word. He had started his career in the laboratory of the Mill Street Works of the Bradford Gas Department, and the man who was responsible for laying the foundation of any success he had had was present. He referred to Wilfred Ineson, and he was proud to call him friend. He not only taught him the A.B.C. of gas engineering, he did far more than that—by his shining example of integrity, his thoroughness in all things, his unselfishness and high sense of duty, he left an impression which remained to this day. And it was Mr. Ineson who was responsible for his first joining the Association, of which he had been a member until 1923, when he, Mr. Smith, left Bradford to try his luck in other places.

The Broader Outlook

At the most successful and enjoyable Jubilee Dinner, Mr. J. T. Haynes (it was due to his foresight when Engineer and General Manager of the Rotherham Gas Department that the Car House site was originally purchased) spoke of the benefits many of them had gained from membership of Junior Associations. He said that with the utmost sincerity, and he (Mr. Smith) agreed with him entirely. He remembered what a great deal he had learnt from visits to gasworks, to chemical works, to coal mines, to the works of appliance manufacturers, and so on; and how much the good fellowship, the friendliness and the opportunities to exchange experiences, broadened the outlook and brought home to him the magnitude of the gas industry and the important part it played in the national life. The opportunities now were far greater than ever they were in the years gone by; with the facilities for education and training which were available to every junior today, it required only initiative, resourcefulness and diligence both at work and at study to enable anyone to climb up the ladder of promotion straight to the top. There was nothing to prevent any apprentice or pupil, provided that he had the necessary qualities, from rising eventually to be the Chairman of an area board.

Promotion by Merit

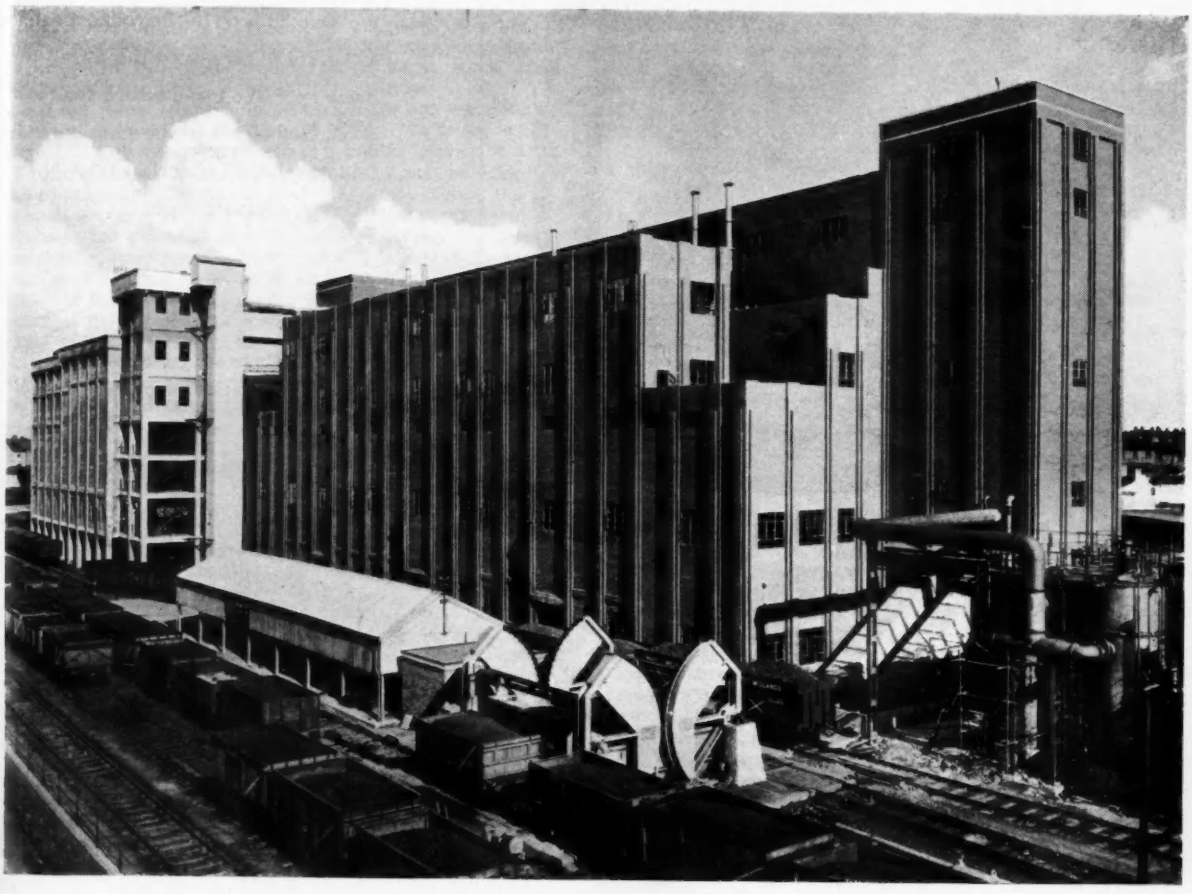
Today, more than ever before, 'the tools are to those who can handle them' and promotion was by merit. Given character and personality—and in these he included not only integrity in all things, but the all-round qualities of intelligence, energy, curiosity and enthusiasm, and the quality of human understanding which carried with it the ability to bring out the best in other people—given these qualities, for they were the fundamentals necessary to any individual who might ever hope to lead, promotion would be earned by those who provided themselves with the necessary equipment of qualifications and experience, rather than by those who expected to have a job guaranteed before they began to train for it. To the more senior Juniors he would like to say a word about the serious responsibility which rested upon those in any way concerned with training. To a large extent they had in their hands the moulding of character and the laying of the foundation on which the future of the trainee would be built. They must always remember that example came from above, ensuring that in every aspect training was adequately supervised and thoroughly carried out.

Mr. Smith concluded: Give encouragement to the youngsters and keep a sharp eye on their development; temper firmness with tolerance and guidance with understanding, so that the final product will be a man of whom you can be proud. Who knows? He may one day be responsible for the training of your own son. And remember that no man can discipline others successfully until he has learned to discipline himself.

GEORGE WILSON ANNIVERSARY

THE Dutch firm of De Nederlandsche Gasmeterfabriek George Wilson celebrated their 75th anniversary towards the end of October. A reception was held at the Kurhaus, Scheveningen, which was attended by some 360 guests, including English relatives and shareholders, associated with the industry. As is the custom on the Continent, the guests presented the directors with various gifts and, in particular, decorated baskets and bowls of flowers. A dinner for the shareholders followed this reception, and on the following day the works were closed, so that employees could join in the celebrations, which were preceded by the laying of wreaths on the bust of Mr. George Wilson, who founded the establishment in 1878, by Mr. F. C. Wilson, the oldest surviving male member of the family, who will himself complete his 50th year with the English company of George Wilson Gas Meters, Ltd., in 1954, and a senior member of the staff in Holland.

Presentations were then made to the directors from the workpeople, who had saved twopence a week for three years for the purpose. Each of the events was concluded with the band playing both the Dutch and the English National Anthems.



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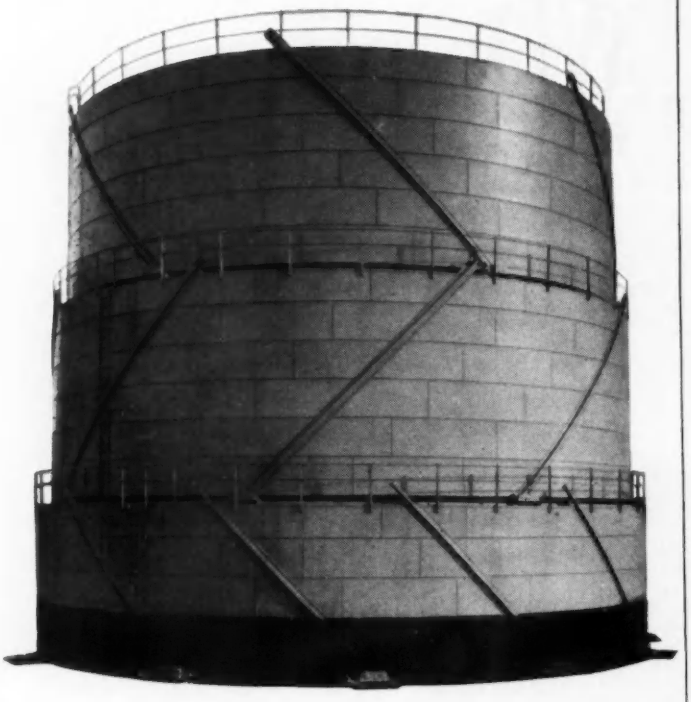
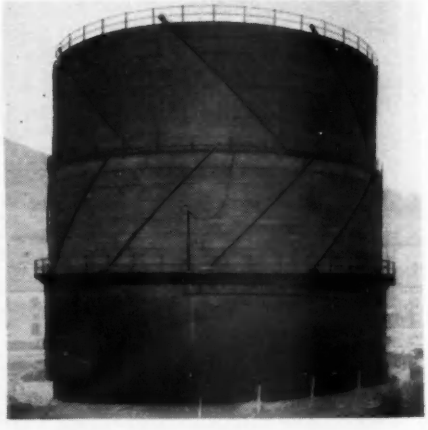


The long and imposing list of contracts which we have carried out in post-war years is a striking tribute to the reputation for dependability which we have built up in the course of almost a century of service to the Gas Industry. We manufacture and erect Gasholders of the spirally-guided, column-guided, Waterless (M.A.N.) and high pressure types.

Illustrated here are two of our many recently completed contracts.



Above : 3 lift spirally guided Gasholder of 150,000 cu. ft. capacity, 55′0″, 57′7½″ and 60′3″ dias. x 20′0″ deep, in existing masonry tank, for North Eastern Gas Board, Skipton.

On right : 2 lift spirally guided Gasholder of 250,000 cu. ft. capacity, 77′6″ and 80′0″ dias. x 26′6″ deep in steel tank 82′9″ dia. x 27′0″ deep with foundations, for the Wales Gas Board, Abercarn.

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A GAS INDUSTRY ACCOUNTANT

FROM A PAPER TO THE LONDON AND SOUTHERN SECTION OF THE INSTITUTION OF GAS ENGINEERS ON OCTOBER 27, 1953, BY

L. W. SMITH,

A.C.A., Deputy Chief Accountant, North Thames Gas Board.

THE DANGER which besets large-scale enterprise is too great departmentalisation of effort and outlook. This leads to lack of appreciation of how one can help the other fellow and not only how to lighten his task but how to help him clarify his problem. Therefore, I address this paper to engineers who are, no doubt, wondering why they should be burdened with knowledge of accountants' work when struggling with plenty of their own troubles.

All too often accountants in commerce are regarded by technical persons as a necessary evil. The truth is that engineers and accountants are two vitally important arms of management. Engineers make plans and estimates of the physical running of the works, and finally they put the executive's orders into practice. Accountants have to evaluate the technical data in terms of money in order to judge the economics. They have to keep management informed whether a profit or loss has been incurred and how the results of the future are going to come out. The accountant is eager to produce information to engineers that will enable them the better to run their works or services. Of course, an accountant may serve up too many figures. This results in confusion; essential points are lost in a welter of detail.

Integrated Financial Accounts

The accountant must be able to show the management what they want to know at all levels as soon as possible after the events which the figures depict have occurred. When the accountant is deciding a system for a large undertaking, he has to produce first of all figures to provide the cost of the items in the Board's revenue account, and secondly the figures in the departmental cost accounts to enable each departmental manager to know how he is getting along.

The items required in the Board's revenue account are fixed by the Gas Council in agreement with the Ministry, and, therefore, the accountant has to see that the departmental cost accounts are broken down so that both sets of figures, in the revenue account and in the departmental cost accounts, can be produced at the same time. Greater accuracy and speed of preparation can be achieved if the one set of figures is used to produce the two results.

The chief accountant's primary responsibility is to be able to report to the board on the financial position of the concern at regular intervals. For this purpose the financial accounts must be assembled monthly so that monthly revenue accounts can be produced. In producing monthly revenue accounts, there must be a good deal of estimating, but on the whole reasonably accurate accounts can be presented. One of the difficulties in monthly accounts is calculating the revenue from gas sales. Correct figures are obtained every quarter, but in the intervening months it is necessary to rely on the production figures to estimate the revenue. It is not claimed that monthly accounts give a true and accurate result, but they give sufficient indication of the progress of the board on which decisions can be based.

Having studied the monthly accounts, the chief accountant must be in a position to deal swiftly with any changes in the board's position due to increasing costs so that the board's revenue account is balanced taking one year with another. Thirdly, he must advise the board of the amount of new capital required from time to time to finance new work which cannot be met out of the resources of the board.

New capital can, of course, only be received by reference to the Treasury in a nationalised industry. The Gas Council is responsible for advising the Treasury of the amount of capital required to meet such expenditure every quarter, and pending the issue of Gas Stock the Treasury allows the Gas Council to obtain advances within limits from the banks. The accountant must obtain estimates of capital required from all the spending departments, and co-ordinate them for submission to the Gas Council on behalf of the board. Fourthly, he must so organise his accounting system that managers of departments are swiftly advised of the costs of running their departments. He must devise proper systems for billing and collecting cash for the board's sales of gas, coke, and by-products, for controlling and looking after the mass of stores belonging to the board, and for the payment of all expenditure on wages and contractors' accounts. He must do this in the most economical way using machines to assist him where their use is cheaper in manpower and more efficient in producing good results.

Board's Accounting System

The departments of the North Thames Gas Board are organised in the main on a functional basis—that is to say, the departmental heads are responsible for one general function. Each of the officers of the headquarters management, the specialist officers, and the managers in charge of operational units requires to know the cost of running his particular unit.

Thus, the accounting system must be built up to give these two sets of information:—

(i) Departmental and cost accounts of each function.
(ii) A breakdown of the costs of each department, so that they can easily be fitted into the total board's costs in order to produce monthly revenue accounts and the board's final accounts at the end of each year.

To provide the departmental cost accounts the accounting of the board is divided up into a number of units, some of which are full accounting units which run what we call a current account with chief office and usually have a departmental accountant to control and prepare the local accountants, and some are known as 'non-accounting units.' The latter are really expense accounts maintained in the chief office ledger, and cover such departments as the chairman's and secretary's department, chief engineer's department (headquarters), accountant's department, stores buyer's department, estate department, etc. In these units the chief accountant is acting in the same way as the departmental accountant, and himself providing the departmental accounts for the heads of departments concerned.

In respect of the 40 or so accountant units, the chief office ledger only contains a current account with the unit concerned. In other words, the unit is treated as a branch, which deals entirely with its own business but runs a current account with its head office. There is a system of internal charging so that any department which does work or supplies goods to another department can invoice and charge such department via its current account with chief office.

Some departments or units work entirely for other departments of the board and are known as service departments. An example is the transport department, which works on delivering coke, and charges the gas stations for such work; on transporting meters and appliances, it charges the commercial department, and perhaps the accountant's department is charged for delivering cash for wages. Similarly, the building and property maintenance department, which maintains all property other than gas station property, will charge maintenance to the department using the property, or the chief office property account if it is property owned and let out by the board.

Some units control small units which work for all departments of the board, for instance, the chief accountant con-

trols the board's punched card unit which analyses costs for several departments.

While each department has its own expenditure under its control, it can prepare monthly cost accounts of its activities, and at the same time the head office can, by substituting the departmental expenditure and revenue account for its current account, easily prepare monthly revenue and net revenue accounts for the board; these are usually completed within one month after the end of each month.

Accounting Units

Each accounting unit has its own coding system for allocating expenditure. Except within departments the codes are quite independent of each other. No attempt is made to have a uniform code number for one expense throughout the board. No confusion arises from this, and it enables code numbers to be much smaller, a two-figure main code being sufficient for every department. This main code can, of course, be broken down by further sub-codes as necessary.

There are 21 gas-making units, each with an engineer or manager in charge; and each, except in one case, is a complete accounting unit with a station accountant to prepare the local costs.

These costs are divided into sections showing cumulative monthly figures for:

(1) Process costs. Coal, oil, carbonisation, water gas manufacture, gas condensing, gas exhausting, purification, metering, and power.
(2) By-products. Credits for coke and breeze produced, coal tar, benzole, oil gas tar, and ammonia makes.
(3) Credits for coke and breeze marketing.
(4) General charges—administration and station control.
(5) Station services by cranes, transport, etc.
(6) Normal maintenance, sub-divided under each class of plant.
(7) Special expenditure, revenue jobs which are separately estimated for and costed.
(8) Capital expenditure, divided between renewal and new work.

While actual expenditure on each normal maintenance code (under (6) above) is shown, the totals subdivided under headings of retort house maintenance, resetting, and general maintenace are equalised.

Monthly equalised charges are laid down for each works, which in the case of retort house maintenance are based on a standing charge plus a figure based on tonnage of coal carbonised; resetting based on the tonnage of coal carbonised; and, in the case of general maintenance on an average charge calculated over a number of previous years' experience.

The local engineer has fairly complete monthly costs of running his station, and can enquire into any item which appears to call for special investigation.

Subsequently the chief accountant sends the local engineer three summaries of the cost of gas-making showing:—

(i) Cost of coal gas manufacture.
(ii) Cost of water gas manufacture and cost of blue gas.
(iii) Mixed gas—cost of manufacture.

Statements (i) and (ii) show the costs with all charges which can be directly allocated to the costs of manufacture less amounts estimated to be recovered from sale of by-products, and these costs are transferred to statement (iii) to give the total cost of manufacture of mixed gas.

Comparative Costs

It should be stressed that comparative costs are only a guide and can be used only with a comprehensive knowledge of the plant construction and technical efficiency of the various works, as well as allowing for local variants. The figures are considered by the station engineers at their monthly meetings and changes from month to month are explained.

The chief engineer uses the statements in forming immediate and future policy—*i.e.*:—

(i) Closing-down of small works.
(ii) Making best use of the most efficient plant.
(iii) Putting up new plant and asessment of saving thereby.

In addition, the statements are of great value to the chief accountant in preparing the board's estimated revenue account.

The commercial manager controls a number of divisions and districts which are organised on a geographical basis throughout the board's area. Each division or district is under the charge of a divisional or district manager who has an accountant to prepare the local departmental costs. In addition, there is a further division dealing solely with large business and large industrial undertakings, local authorities, and the like. This division is not territorially restricted, and operates throughout the area of the board. To co-ordinate the work of the divisional accountants a divisions accountant is attached to the commercial manager's staff.

The costs of the divisions are organised to show the functions controlled by them, which are set out monthly under the five main headings:—

(i) Service to consumer, comprising installation, maintenance, and carcassing work.
(ii) Public lamp lighting and maintenance.
(iii) Maintenance of mains and service pipes.
(iv) Installation of new mains and services—capital expenditure.
(v) Rendering and collection of accounts.

Each of these activities is broken down to show the costs of the main classes of work, as necessary, and the overhead charges connected therewith. Monthly cumulative costs are passed to the divisions accountant.

Every six months the divisions accountant prepares summaries of the costs of each division, and in these summaries credit is taken for the sale and hire purchase of appliances and estimated charges are made for the cost of appliances sold by each division. These costs are critically examined by divisional managers at their meeting so that the board's methods can be revised as necessary, and any economies effected.

The costing of the manufacturing of by-products is necessarily complicated, involving as it does process accounts where the finished product of one process becomes the raw material of the next.

The transport department is perhaps the only complete unit which can readily compare its results with outside contractors, and so it must be able to justify the use of its vehicles, and the purchase of new vehicles as opposed to outside hiring. For this purpose, and for the purpose of charging departments for transport used, the departmental accountant keeps group vehicle costs. The board has about 750 commercial vehicles in use and these are divided into some 50 groups, generally according to size, but in some instances in accordance with function and size.

Some of the groups are engaged on single functions such as coke delivery, so that it is possible to find the cost of running the group and the cost of delivering the coke carried by that group. The cost of running each group can be broken down to give wages, fuel, lubricants, tyres, depreciation, repairs, clothes, licences, insurance, etc., and overhead allocation. These group costs are used for charging out departments with the transport they engage.

Stove and Meter Departments

These two departments are concerned with the purchase, warehousing, and repairing of meters and appliances. Renovation is carried out either by the department itself or by outside contractors. Thus the monthly figures must show these costs separately, and when we do the work ourselves the costs must show the breakdown between wages, stores, fuel and power, overhead expenditure, etc., so that comparison can be made with previous periods. In addition, renovation to certain types of appliances must be separately job costed to give an indication of the price or rental that can be charged for the renovated appliance. Similarly, in meter costing the cost of renovation is required when considering the meter rent.

Costing Section

In addition to accountancy costs, a great deal of statistical information is necessary on the movement of appliances and meters and the stock position in order to assist the commercial department in formulating its policy.

Costing for all the gas stations is a centralised function. This section prepares the thermal costs of gas-making for

each gas station, and all statistical information relating to the manufacture of gas and coke.

In addition, statistics relating to gas sold and unaccounted-for gas are also kept and the value of gas which has been burnt by consumers between the date of meter reading and the end of the financial period is assessed for the purpose of the balance-sheet. In this board meters are read in a continuous quarterly cycle, and the value of the unread gas is calculated each quarter.

It is assumed that each consumer burns the average quantity of gas burnt per consumer in his respective group. Consumers whose meters are read in the first month of the quarter are outstanding for the whole of the second and third months of the quarter. The addition of the three months' figures will give the quantity of unread gas, and this quantity is valued in accordance with the actual price charged to each group of consumers. The effect of seasonal changes in the gas made and sent out to consumers is reflected in the monthly average daily consumption.

The section also controls the spending of money on capital and large revenue projects by comparing the previous estimates made with the actual monthly expenditure.

The monthly revenue accounts enable the chief accountant to forecast the board's financial results for the coming year. And this result is, of course, of vital importance in determining the estimated future cash resources of the board.

These revenue estimates are produced at the beginning of each year, say about the middle of May after the previous year's results are known, and then adjusted when material changes take place. The estimates are further recast when the half-year results to September are available. I do not think they should be adjusted too frequently, as in a business of this kind, which depends very greatly on temperature conditions, a trend appearing in one month can very easily be reversed in the next month.

One of the alarming results which appear in monthly revenue accounts is the heavy losses which the board makes in the summer months of the year, and indeed it may not be until December or January when the board perhaps begins to turn the corner, and it can be seen whether a surplus or deficit is likely for the year.

This forecasting of results is a very important function of the chief accountant, and it is vital that forecasts should be adjusted when known changes affect the figures.—*i.e.*, a large rise in cost of coal or transport. This is usually done by showing the effect of such changes over the previous forecast. Of course the chief accountant is advised by the chief engineer of the estimated future production of gas, and by the heads of other departments of any trends which may affect the normal expected business of the board.

Stores

In the board we have a controller of stores and under him a stores buyer and a stores superintendent. The chief accountant is responsible for the actual system of stores accounting in operation, although, of course, he only operates systems through his staff at the various gas stations, the divisional side of the stores falling under the control of divisional managers as previously explained.

Stores are maintained:—

(i) Centrally at the central stores.
(ii) At gas stations and other units.
(iii) At small divisional stores.

Quantity records are maintained for all stores under items (i) and (ii), but for those items maintained in the small divisional stores, no records are maintained. This has some disadvantages, but it is claimed these are outweighed by the cost of clerical labour involved in a tight system of control. Stock is taken generally throughout the board on the continuous system twice yearly, except at divisional stores where stock is taken twice yearly but at a date towards the end of each half-year.

The accountant's responsibility therefore is to see that stores accounts are properly maintained and agreed with the physical stocktaking. The latter is ensured by the internal audit section who keep a close watch on this work. In these days very large sums of money are locked up in stores, and it is therefore important that they are properly safeguarded, and are also kept to the minimum requirements.

Financial control accounts are kept of each store, so that any large losses can be detected. It has been found that only one quantity record is generally sufficient—*i.e.*, bin cards are not used in any of our stores. Only one record is maintained by the clerical staff and not by the storekeeping staff. This is often regarded as not allowing the storekeeping staff sufficient information, as ordering has to be done usually by visual inspection of the stores, except in the central stores when the ledger clerks order the stores. I do not think, however, that we lose any control by only maintaining one record.

Accountant and Management

My last point is how the accountants in the gas industry can better assist the management and the managers of the departments in carrying out their functions. First, they must be constantly on the watch to see that the cost accounts they produce are accurate, and quickly bring to the notice of their managers unusual items or excessive items of expenditure. They should preferably spend an hour or two each month going through the figures with the departmental heads, and they in turn should try to explain to the accountants when the figures do not set forth clearly the facts which they desire to know.

Secondly, they must compare the items making up the costs with past experience, and also perhaps with budgeted figures for the future. This is a feature which has not been adopted to any large extent in this board. We do compare expenditure on special repair jobs and capital expenditure jobs with estimates, but no annual budgets are prepared for items making up the general charges on works or expenditure in the departments.

It is perhaps a debatable point whether budgets should be set for all types of expenditure in the departments. There is some danger in such a system that necessary work is not carried out in order to keep within the budget, or perhaps delayed until another period. On the other hand, with certain types of expenditure it might be possible to establish reasonable estimates, which would not lead to delay in the execution of necessary work but would make expenditure more carefully examined before being carried out. Again a budget is not much use if it is continuously being altered or no regard is had to over, or even under, spending.

I am not altogether satisfied that such a system would be to the general advantage and lead to greater efficiency in a business of this kind.

Whether we have a budgetary system or not, we must be constantly alert to keep our departmental costs as complete as possible—*i.e.*, to charge all expenditure relating to a department to that department. This is difficult sometimes; a good deal of apportionment is necessary, but I think it is worth while.

Depreciation

There is one large item which is not at present charged out to departments and that is depreciation. This item is, of course, taken into account in dealing with proposals for a new project, but with our present knowledge of the capital value of works and mains it is very difficult to determine an accurate charge for each gasworks and department, unless, of course, we revalue all the works and other pre-vesting assets. I think, however, that this expenditure as the years go by and works gradually become renewed will be an increasing factor in the costs of gas-making and distribution and we should be prepared to make proper charges to each department, so that the costs of gas-making and distribution are as complete as possible.

The same argument also perhaps applies to interest on capital employed.

On the gas-making side, I think we might consider making available to engineers the cost of making gas from different types of retort house. The only disadvantage I see in this is that it does mean producing rather a lot of information for the engineer which he may not have time to digest. It may be that it is sufficient to have

this information available so that it can be called for from time to time when special circumstances appear to make this necessary.

DISCUSSION

Dr. **A. E. Haffner** (North Thames) said there came a time when a young engineer, accustomed to thermal balances, and so on, began to acquire a new terminology and came into contact with matters such as amortisation and budgetary control. There also came a time when there was such confusion that he had to go to an accountant to have things sorted out. Accountants represented a necessary component in the team. Among the things the young engineer needed to pick up in training were not only technical efficiency and knowledge of how to deal with manpower problems; he needed also to become cost conscious. It was difficult in the normal course of training to transmit that information.

The monthly comparative summary of costs of gas-making at the different stations was extraordinarily stimulating; it was discussed each month and the principal causes of changes and variations were explained. Dr. Haffner urged, however, that too much importance should not be given to too short a period. He criticised the presentation of monthly figures only, or even the accumulating figures for parts of the year, and would ask for figures over a continuous 12 months period, so that costs were based on 12 months figures to date. During the early stages of the year the progressive figures for the portion of the financial year which had passed could not stand the strain of too close a scrutiny because they were based on data whose freakishness and inaccuracies could only be levelled out over a longer term.

It was necessary that a particular station's policy should be determined by local conditions of coal price, coke market, etc., and therefore the comparative costs should be based on all the local conditions, favourable or otherwise. Nevertheless, it would be appreciated, particularly by less favourably placed stations, if comparative costs were also worked out on board's average prices for coal, coke, etc. Thereby the unfortunately placed stations would be able to see how they stood on equal terms with more advantageous stations; similarly the stations having all the advantages would find it a challenge to see whether, after all, they were making quite as good a job as were those who were in a disadvantageous position.

Mr. Smith had hinted at the possibility of working out the separate costs of individual retort houses. That was already done for carburetted water gas, but that had its own raw materials and the only by-product, oil gas tar, was normally kept carefully separate from coal tar. The information would be very valuable and often very revealing, but simultaneous coaling of houses and the mixing of by-products made the data uncertain, particularly over short periods, and the calculation of costs with a fictitious accuracy was not justified.

Operation 'Brain Picking'

Mr. **C. J. B. Sawbridge** (South Eastern), suggested that the reference in the paper to the eagerness of the accountant to produce information, to the need for deciding what form the information should take, to the danger of serving up too many figures, and to the suggestion that too little might often be too much, could with advantage be copied and hung in a frame on the wall of the accountant's office. Equally valuable was the advice to accountants to get out of their offices and obtain from the engineer 'on the spot' advice and instruction regarding technical operations and problems; any engineer or chemist who would allow his brains to be picked by the accountant would not be wasting his time. At the beginning of the paper Mr. Smith had stressed that engineers and accountants were two vitally important arms of management. Mr. Sawbridge added that the only sure foundation for team work in the fullest sense—and top management should be entitled to expect nothing less than that—was mutual trust and respect, which could be created only by such personal contact.

Putting questions about the procedures described in the paper, the first related to the treatment of purchase invoices. It would appear that the service departments handled all charges under certain heads. Did that mean that the invoices were coded in the first instance to the service department, rather than the department concerned? Again, it was stated that the local cost units entered up their charges straight from the invoices without waiting for advice of payment. At first sight it would appear that those methods might create some duplication of effort and also the need for some reconciliation between local and central records; if that were so he would be most interested to know whether some treatment had been devised to get over those problems.

The second question related to the monthly revenue accounts. Having read and heard a great deal of that technique, but never actually having prepared such accounts, the paper seemed to him to provide a golden opportunity to ask a question which had always puzzled him—how did one avoid such accounts creating quite unnecessary flaps? There was the forward estimate for the entire year, and he agreed entirely with the author that it should not be altered too frequently. Then there were the regular monthly cost statements which should tell them how they were going, and at once bring to light any major variations affecting the forward estimate.

He would have thought that under nationalisation it would be more realistic to direct full attention to the careful control of costs, with the object of keeping the forward estimate constantly under review and up to date. The cost statements and records of standing charges would take care of every item in the estimate except gas sales, and the correctness or otherwise of the forward estimate could be reviewed regularly under that head against the gas output figures.

A Vital Rôle

Mr. **L. J. Clark** (North Thames) congratulated the author on an excellent paper, timely and apposite. Now that they were getting to the end of the first five years of nationalised working, it was fitting to look at some of the tools and machinery used in recording, controlling, interpreting, and, in fact, directing the activities of their concerns. In that field the rôle of the accountant was absolutely vital. The reviewing of figures from top to bottom of the whole management range was vitally important. On the broadest basis at the top, the figures would become more detailed as the field was narrowed coming down the scale, and he suggested they should go as far as the plant engineer on the manufacturing side and corresponding officers on the utilisation side.

To help in the interpretation of the figures, he asked for Mr. Smith's views on the use of graphical or chart forms. It appeared that they indicated trends and made them conscious of sudden changes.

On the question of basic information on which the whole of their costing was built up, he felt that any system needed to review the method of allocating men and materials and that sort of thing right at the bottom, so that they could build up the fullest confidence in the whole system. All this was desirable, because, although the industry had flourished tremendously since the war, it might experience a severe time.

On the author's reference to stores control, suggesting that there should be a central record controlled by the staff, that there was no need for bin cards, and so on, Mr. Clark felt that the system, although it provided excellent financial control, might give second place to an important thing which used to provide service to the works, and that was to provide material of the correct description at the time it was wanted. There was a danger that, if too much of the control were divorced from the storekeeper who looked after the physical stock, service might be reduced.

Finally, concerning the emphasis on the great need for co-operation between the engineer and the accountant, he said he had had the privilege of serving on a committee of engineers and accountants, and it had become clear that, apart from any recommendations the committee were able to make, whether good or bad, all who had served on it had derived great benefit from the study of the other man's side of the job.

Bridge Building

Mr. **E. O. Rose** (Eastern) said one knew that what Mr. Smith had said represented the views of the North Thames Board; but did it represent the views of accountants throughout the industry? One could remember the days when the accountant produced a balance-sheet for the board of management which had no relation whatsoever to what was actually going on, and the engineer had his own costs. A bridge was obviously being built in the North Thames Gas Board, and he wondered whether people were trying to build such a bridge elsewhere. The Eastern Gas Board had had to build such a bridge; they had started before vesting date. Initially they had had on the one hand the old accounting system, and on the other a costing system built up by engineers, one might almost say despite the accountant; then they began to build the bridge, which was now, he was glad to say, fairly complete. Monthly cost accounts they had had for a long time, and they had always been able to show separate costs for separate plants and sections where there was more than one section in a works.

As one who had the rather doubtful but great privilege of being exposed for long periods to a firm of production efficiency experts, he said the first thing they had told him was that they should cost not when a job was done, but before it was done. It was of no use knowing even at the end of a month what the production costs were. They should know at the beginning of the month. He would call that form of costing 'estimating.' He had been told that, having done this, it was not necessary to have historical costs afterwards, because they were completely covered by the previous initial costs. He

failed to see that, however, and asked for Mr. Smith's views and whether he could suggest anything that could be done to give more rapid information on the works.

One impression he had gained from the efficiency experts was that accountants should do very much more site research, and the engineers should invite them to do so. He would like to see an accountant going over the works and telling him exactly the effect of changing load factor on the costs of a retort house. Such researches need only be spot researches, 12 months on one plant or another.

Mr. **J. C. Hogg** (Southern), commenting on Mr. Smith's remark that engineers in the past had perhaps looked upon the accountant as a necessary evil, said there had been co-operation in recent years, and the comments made at the meeting indicated that it had its advantages. But surely one of the fundamental difficulties was that of language; very significant difficulties arose when different technicians on the works, trying to collaborate with accountants, used different types of language. Knowledge of accounting language was of advantage to the engineer, and apparently it would be essential for the future engineer. He asked if Mr. Smith could indicate the extent to which overheads were spread between departments.

The Author's Reply

Mr. **Smith,** replying to Dr. Haffner, said he was not quite certain whether the use of moving 12-month totals was the best method. He always liked to look at what had happened in the previous year. If they dealt with moving 12-month totals they got away from the annual accounts; that might be looking at the matter from the accounting angle, but when preparing costs one was thinking of the accounts for the actual year.

In regard to the point that, in addition to comparative costs based on actual costs of coal, etc., comparative costs might also be worked out on average board's price for coal, he said the cost of coal at each station was known and obviously an allowance was made for the difference between the standard and the actual cost. Where a better figure for a station could be obtained by using a standard cost of coal it might give some help to the engineer; but again Mr. Smith said he preferred to look at the facts.

Replying to Mr. Sawbridge, he said that all invoices went direct to the unit and, if the goods were there, the unit passed the invoices forward to the chief office, which paid the accounts. In regard to charging out, he said the unit had the invoices in its books and would charge out according to its costs.

As to monthly revenue accounts perhaps giving rise to 'flaps,' he said that when one saw that profits were going down, one did not get into a flap about it, because one expected it; one was reasonably happy if the same sort of thing were happening as in previous years. If, however, profits were going down, whereas at the same time in the previous year they were going up, one could take steps to effect more economies.

Budgetary control was not perhaps the sole means of improving management. He had a great deal of faith in it in certain circumstances, but he wondered whether for the gas industry, with so many variations between standard and actual, it was the right thing, whether they could get the same sort of help by looking at the monthly statistics of the grades of coal, gas production, and the amount of by-products produced, the number of retort house workers, variation of temperature, and so on. Whether it was necessary to turn all those things into money in order to evaluate them and give better management, he did not know; he was still open to learn whether or not it was the answer, but it seemed rather too complicated to inflict on a manager. It appeared to him that it must be broken down to each retort house, and this involved an enormous amount of paper work which might not give the benefits one had hoped for ultimately.

Dealing with the question of charts, raised by Mr. Clark, he said he had never been a great chart user, but no doubt they could be of great assistance from time to time, enabling one to watch trends. About bin cards in the stores, the North Thames Gas Board had managed for many years without them, and he supposed it was possible that without them there might be a tendency to increase stocks unnecessarily; but if the keeping of one record would do the job, let them try to limit it to one instead of two.

Replying to the question by Mr. Rose as to whether the views set out in the paper were also the views of accountants in other parts of the industry, Mr. Smith said he was not altogether familiar with the practice of all the other boards, but he believed the functional organisation in the North Thames Board was rather separate from that of other boards; they had their costing systems, but whether they were linked up as were those in the North Thames Board he did not know. Of course, some of the other boards had had to take over a lot of smallish companies which had held perhaps backward ideas, so that it might take a number of years to achieve complete integration of costs. He expressed agreement also with Mr. Hogg on the importance of engineers and accountants being able to talk the same language.

In the North Thames Board it was the practice to charge a certain amount of the overheads of one department to another. If, for example, the distribution department laid a main for the chief engineer's department, which latter looked after the trunk mains, an overhead cost would be charged to the chief engineer. He considered that in certain circumstances that transfer of overheads from one department to another was necessary.

Vote of Thanks

Mr. **J. T. Haynes** (President of the Institution of Gas Engineers), expressing appreciation of the way in which the Chairman of the Section had welcomed him, said he accepted it as a tribute to the Institution rather than to himself, as a member of the Section. He offered congratulations and very good wishes for the continued success of the Section, for the Institution looked forward to very great things from the London and Southern, and he was sure it would get them.

Proposing the Section's thanks to Mr. Smith for his paper, Mr. Haynes said that as the result of contact in later years those in the Southern area were very proud, and obviously Mr. Smith and the North Thames Board were equally proud, of the personal confidence the accountant and the engineer had in each other. About costs, Mr. Smith had shown how one compared costs and decided whether or not one could account for the differences between one year and another. But engineers were concerned about what costs should have been. Time and again he had heard the same question put in different ways, and the answer every time was the proper drawing-up of a budget and operating it as the standard by which to measure operations. When comparing two works, each using different coals and having different plant and different labour forces, one wanted to know what each was capable of, and a real measure of them enabled the higher management to determine whether or not a particular unit should be re-modelled or re-conditioned.

Mr. **J. D. C. Woodall** (South Eastern) seconded the vote of thanks, and Mr. **Smith** briefly responded.

BRITISH COUNCIL REPORT

THE report on the work of the British Council for the year ended March 31 records that there are now in Britain over 18,000 overseas students who spend some £7 mill. a year on fees and maintenance in addition to what is spent on transport to and from Britain in British ships and aircraft. During the year the Council's staff met 3,097 students, mainly from the Colonies, on arrival. Transit accommodation was arranged for 1,726 and longterm accommodation for 2,447, including 548 in the Council's hostels.

The Council arranged programmes for 3,619 people from overseas, in which connection it was responsible for the expenditure in Britain of £450,000 from sources other than its own, including 1,570 on short courses and study tours, 701 professional visitors, 662 holders of U.N. and Colombo Plan awards and 394 British Council scholars and bursars. The average contribution from U.K. public funds, towards the expenses of professional visitors who need individual programmes was £12 2s. each, and for those in groups at the courses under £4 each.

Welcoming the conclusions of the Engineering Training Mission which last year visited Latin America for the Federation of British Industries, the report recalls the part taken by trade missions in the movement to set up the British Council in the thirties. Giving examples of action relating to subjects with which the F.B.I. Mission was concerned, it points out that in 1952-53, 193 Council scholars and bursars were studying scientific subjects and many of them the application of scientific knowledge, which necessarily carries industrial implications. Among subjects of courses were 'Engineering Aspects of Public Health' and 'Television.'

Photographs sent out included sets on British glass and civil aviation. Many British engineering periodicals were used in Council libraries, reviews overseas of 444 British books on engineering were secured and, with the help of British firms, much other information on British engineering was supplied. Partly owing to the Council's work, there is a steady demand from Latin America for radio-active material from Britain. The amount provided in Parliamentary estimates for the Council in 1952-53 was £2,527,100, which was 8% less than in 1951-52, and actual net expenditure was £2,462,929, after allowing for receipts of £399,106, mainly from teaching fees, hostel charges and sales of publications.

THE STREET WORKS ACT

FROM A PAPER TO THE WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION BY

K. L. THWAITE,

Assistant Distribution Superintendent, Neath Undertaking, Wales Gas Board.

THE Public Utilities Street Works Act which came into force in the year 1951 was a direct result of over 25 years of discussion between various interested bodies, among whom was the gas industry. The Act sets out to establish uniformity of practice in, and control over, the breaking open of highways. It is far reaching in its powers and implications and settles many points which were hitherto always bones of contention. It is equally true to state that the Act has set up new points where differences of opinion can and do exist between the highway authorities and the public utilities. The working of the Act can be greatly eased if close and amicable liaison exists between a public utility and the highway authorities, and I am convinced that much unnecessary friction can be obviated if such liaison is attained.

All our normal new main and service laying programmes and the repairs to our existing systems are covered by the Act.

The term 'street' is taken to mean any road, lane, footway, alley, or passage whether or not the road is made up. It will be seen, therefore, that practically all 'ways' which the public at large use daily are affected. The Act lays down a recognised procedure when it is the intention of a public utility to open a highway. In order that the provisions of the Act may be correctly applied the Wales Gas Board has printed certain forms which have to be submitted to the authorities at the appropriate times.

Now to the actual procedure. It has been decided that it is necessary to lay a new main from point 'A' to point 'B' along a street to improve existing supplies. We can assume that the necessary Gas Board permission has been obtained and the estimated capital expenditure approved. It will now be necessary to submit the Public Utility Street Works (P.U.S.W.) 1 Notice. This is the proposal to execute new works and must be submitted to the highway authority under whose jurisdiction the particular road or roads come.

Of the three types of road the first is a maintainable highway. The highway authority in this case would be either the local town council or the county council.

The second class of highway is the 'prospectively maintainable highway' which is a street which has been declared by the local authority as likely to become a maintainable highway. If a doubt exists whether a particular road is a prospectively maintainable highway or not, a search can be made of the register of local land charges. If the proposed works lie in a road of this class the notice should be sent to the local highway authority.

The third class of highway is the private road. This is a road not maintained by the public, and the persons responsible for it are called the street managers. In the majority of cases these would be the owners of property abutting on the private road.

P.U.S.W.1 must give a description of the work to be executed and to this notice a plan and section must be attached. All that is required of this plan and section is that it shall show adequately the proposed route, depth, and position of the new works.

The authority to whom the P.U.S.W.1 has been sent must within 29 days in the case of a main or eight days in the case of a service pipe, either:—

(a) Approve plan and section without modification.

(b) Object to the plan and section as being too small in scale or giving insufficient particulars.

(c) Approve the plan and section subject to any modifications as may be specified in the notice.

(d) Disapprove the plan and section.

If the highway authority does not reply within the prescribed period, then the proposal notice is deemed to have been approved.

If the highway authority approves as in (a) above then the next stage may be entered upon without further delay. If, however, the authority disapproves the plan and section as in (d) above then they must state their reasons for so doing, and, usually, friendly negotiations between representatives of the undertaking and the authority will amicably settle the differences. In the rare case where agreement cannot be reached, provision is made in the Act that the matter shall be settled by arbitration.

The authority may disapprove the plan and section on the grounds that the apparatus should be laid in 'controlled land.' This is land which has been earmarked by the highway authority for future road developments—*e.g.*, road widening or dual carriageways, etc. The highway authority may or may not be the owners of the controlled land, but it has the power to grant to the public utility the right to lay its apparatus in it. If the highway authority is not the owner of this controlled land it must obtain all necessary consents to enable the apparatus to be laid in the controlled land within 22 days from the date when the plan and section were approved. If the highway authority is unable to obtain such consents then the undertaking has the right to lay its apparatus in the street in accordance with the original plan and section.

The question of cost is important in relation to controlled land. If the highway authority requires that the main shall be laid in controlled land and the cost of laying the apparatus is less than it would have been if it had been laid in the street, then the difference in cost can be claimed by the highway authority. If the cost is greater then the Board has the right to claim the increased costs from the highway authority.

The plan and section having been approved and all modifications agreed, the first stage is now completed.

The undertaking must now submit P.U.S.W.2. to the highway authority. Such notice must contain the following information:—

(a) The intention of the Board to execute the work.

(b) The date on which the work is to begin.

(c) The place at which the work is to be carried out.

Again in the case of P.U.S.W.2 a definite time period is set, and the work shall not commence until, in the case of mains, seven days have passed, or in the case of services, three days, from the date upon which it was served on the highway authority.

Other Undertakers' Works

If other undertakers' works—*e.g.*, Post Office cables or electricity cables—are likely to be affected, then P.U.S.W. 10 shall be served upon them at the same time as P.U.S.W. 2 is sent to the street authority. This notice must give to the other undertakers the date upon which the work is to commence and details of such work. It is, however, interesting to note that if the proposed work relates only to a service pipe then it is not necessary to notify the other undertakers.

The proposed works can now commence, but they are still controlled by the Act. These controls are best summarised as follow:— (1) That the work must be carried out in accordance with the plan and section submitted to the authority. It is, however, obvious that during the actual operations some minor modifications may become necessary. These can be settled to the mutual satisfaction of both parties quite easily where the usual good relationship exists between them.

(2) The work shall be carried out as speedily as possible. This section is naturally important to all parties.

(3) Other undertakers must be given the opportunity of inspecting their apparatus, and if necessary they can make reasonable demands for the operating undertaking to protect their apparatus. We in Neath have found that, by

keeping a close and amicable liaison between the representatives of other undertakers and ourselves, much unnecessary friction is avoided when such situations arise.

(4) All trenches, except in a place where the public are not permitted to enter, shall be adequately fenced, guarded, and lighted. Traffic signs, where necessary, should also be used. The type of signs to be used is set out under the Road Traffic Act and an ample supply of these should always be available.

(5) No greater length of trench than is strictly necessary for the smooth working of the job should be open at any one time, and all material surplus to requirement shall be removed from the site as soon as is practicable. This is good practice as it ensures that road obstruction is kept to a minimum and that the potential dangers to the public are greatly reduced.

Those last two sections cannot be too strongly emphasised and it is the responsibility of the supervisory personnel to see that slipshod means of protection are not employed. It is too late when a member of the public has had an accident through bad protection of any excavation. The standard of protection should be sufficient to prevent even a blind person from falling into the excavation.

Where works are to be carried out in a street controlled by a transport authority, the commonest examples of which would be railway bridges or level crossings, then the procedure outlined earlier in the paper should be followed. However, there are three major modifications.

(1) The transport authority may elect to execute all works incidental to, but not including, the actual main laying operation.

(2) It may decide that it is necessary to do additional work on its property as a result of the mainlaying works.

If either of these two conditions exists then the transport authority may claim reasonable costs of carrying out such works.

(3) The railway authority can delay the notice time periods as set out under the Act, so as to allow them sufficient time to make all necessary traffic arrangements.

It will be appreciated that in certain circumstances these conditions are necessary owing to the peculiarities which may exist on the property of the transport authority over which it has special control.

Emergency Works

We in the gas industry are very familiar with the term 'emergency works' and it is obvious that in certain cases the provisions of this Act cannot be carried out in their proper sequences. If, for example, a main is found to be leaking we would fail in our statutory obligation to the safety of the public if we had to wait for possibly 37 days before work could commence. In these circumstances P.U.S.W. 11 should be served upon the appropriate highway authority as soon as possible after work has commenced.

In the case of service clearances it will again not always be possible to know exactly when any individual service has to be opened in the highway, as a clearance will first be attempted by use of a suction machine, or any other method which does not entail the breaking open of the highway. This can best be settled by mutual arrangement with the local highway authority, and the system which had been adopted at Neath is that the local authority is notified daily of the proposed work and then P.U.S.W. 11 is forwarded as soon as possible after the work has commenced.

Reinstatement

Reinstatement of trenches, although the last stage of any particular job, is nevertheless highly important, and under the Act, subject to certain provisions, an undertaker is responsible for reinstatement. Reinstatement of the heavier classes of roads will bear a very considerable relationship to the final cost of any proposed works. This is one of the reasons for today's practice of laying new mains in the footpath.

The greater structural strength required of a modern road is recognised in the strict control of reinstatement contained in the Public Utilities Street Works Act. An undertaking, in the first stage, is directly responsible for 'interim reinstatement.' By this is meant the condition of the trench during the period before it is permanently reinstated. The back-filling of a trench is obviously of great importance to the final reinstatement and I would emphasise the importance of proper training of the supervisory personnel. The local borough engineer could usefully be asked to lecture to the mainlaying personnel on basic road construction.

A highway authority can elect to do the whole of the permanent reinstatement of any works carried out in its area or it can carry out such final reinstatements only in cases in which it has submitted a notice to the undertaking of its intention to so do. Where the highway authority has elected to carry out the final reinstatement P.U.S.W. 3 should be sent as soon as the interim reinstatement is completed. In the case of a long excavation it is recommended that this form is submitted for each section of 500 yards wherever this is practicable.

If a highway authority does not elect to carry out this final reinstatement then this shall be carried out by an approved contractor to the reasonable satisfaction of the highway authority. The word 'reasonable' is quite naturally open to varying forms of interpretation and it is argued on one side that in some of the older constructed roads where no pitching had previously existed, it is not reasonable for the highway authority to expect an undertaking to have to pay for pitching to put into the trench.

Road Improvements

I now come to the conditions which exist if road works are to be undertaken by the highway authority. This section of the Act is naturally of great importance to undertakers as it settles conditions which were often in dispute prior to the passing of this Act.

The road works envisaged may be summarised as follows:—

(1) Reconstruction or widening of a street.

(2) The substantial alteration of the level of a street.

(3) The provision of, or the alteration of the position, width, or level of a carriageway, footpath, or cycle path.

(4) The provision of a cattle grid.

(5) Tunnelling or boring under a street.

If a street authority is proposing to execute any of the above works then it must notify undertakers who it believes have apparatus in the area of the proposed works. The undertakers can then, if they so desire, ask for a plan and section to be supplied. Two conditions will now apply.

(1) The undertaking may have to take steps to protect its apparatus.

(2) The undertaking may have to alter the position of apparatus resulting from the operations of the highway authority.

In either case the reasonable cost of such work can be charged to the highway authority.

If, however, an undertaking takes the opportunity during any such street alterations to enlarge the size of its existing main, or increase its depth or any other improvement to the existing system which would not have otherwise needed alteration then such costs cannot be charged against the highway authority.

Need for Vigilance

The necessity of keeping close watch on the proposed road improvement of a highway authority cannot be overemphasised. When such notice is received a review should be made of the existing mains system, and any repairs or improvements should be carried out while the road improvements are in operation. This will avoid the cost of reinstatement which may otherwise have been incurred.

When the road works in question have been resurfaced then the statutory power of an undertaking to break open a street is denied it for a period of 12 months. There are, however, three exceptions to this condition:—

(1) To allow an undertaking to carry out emergency works.

(2) To lay a service pipe only, to premises which are not already supplied.

(3) Work required to be done by an undertaking as an obligation created by an enactment.

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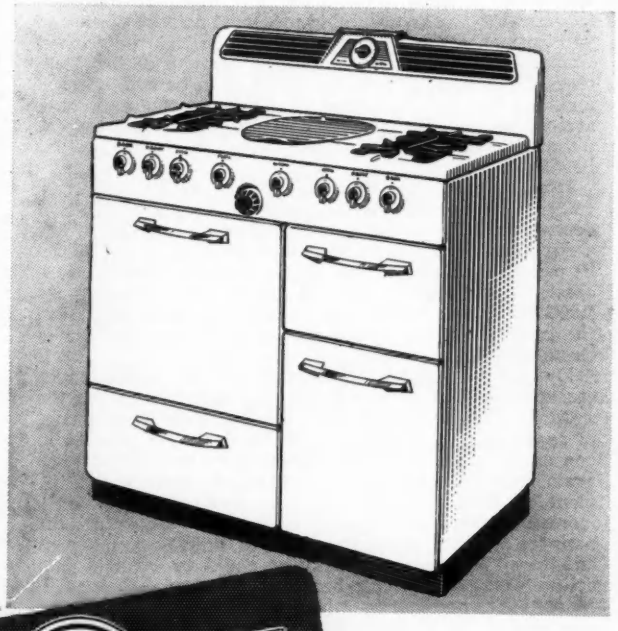

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OPPORTUNITY

FROM A PAPER TO THE MANCHESTER AND DISTRICT SECTION OF THE INSTITUTION OF GAS ENGINEERS, OCTOBER 30, 1953, BY

JOHN WILSON,

M.Inst.Gas E., General Manager, Manchester Group, North Western Gas Board

ON VESTING DAY, May 1, 1949, the North Western Gas Board assumed control of an area which embraced both densely populated industrial regions and sparsely peopled rural districts. After very careful review, the Board divided all the undertakings so that each should fall within one of 17 groups, each group having at its head a general manager as the responsible officer for the whole of the organisation, with the necessary technical and administrative staff for the efficient operation of his group.

The Manchester Group, which comprised the Manchester and Salford municipal undertakings, the Stretford Board, and the Altrincham, Knutsford, and Wilmslow gas companies, was the largest of these groups, Manchester being the largest individual undertaking and, in fact, at the time of vesting, the sixth largest gas undertaking in the country. In common with other large undertakings, where much of the load had been industrial gas, Manchester had had a difficult and baffling period during the inter-war years and immediately afterwards. In assessing the work implicit in this contribution, a brief review of this period is necessary in order to make clear the reasons underlying many of the changes, some of which are otherwise difficult of comprehension.

The stable conditions prevailing in the gas industry up to the first world war had been violently disrupted, and the termination of hostilities did not occasion any return to pre-war conditions, but rather an ever-increasing uprush in the demand for gas. Extension and modernisation of carbonising plant were, of course, put in hand, and opportunity was taken to re-organise the works on the then modern lines. The upsurging industrial activity continued with increasing tempo, and it was obvious that the demand would soon outstrip the productive capacity of the Manchester and neighbouring undertakings, in both production and distribution. The need for extension was imperative and to this end, therefore, a new site was sought and the ultimate choice fell upon an area now known as the Partington works.

It was unfortunate that the opening of Partington in 1929 coincided with the beginning of the great industrial depression. The severity and protracted duration of the slump is too well known to require dwelling upon—it can be measured in terms of gas sales by recalling that in Manchester alone sales of gas fell from 7,200 mill. cu.ft. to 5,800 mill. cu.ft. per annum, and continued to fall until the outbreak of the second world war, when the rise in consumption was meteoric.

During the second world war the only extension to carbonising plant in the Manchester undertaking was the addition of three 50-in. beds at the Rochdale Road works, of approximately 2 mill. cu.ft. per day; yet the increase in consumption was such that obsolete retort houses had, once again, to be brought into action, as was the obsolete C.W.G. plant at Bradford Road, so long outdated. The ever-increasing demand for gas, however, spurred on by the national coal and electricity shortages, quickly outran such additional productive capacity as could be brought into action, and pressure cuts became the order of the day in Manchester, particularly when faced with severe winter conditions. As a war-time precaution, connections were established with the surrounding undertakings, permitting mutual aid in meeting each others needs when stock positions became acute. The position now had great similarity to that of the first war, although much magnified.

Orders were placed by the local authorities for the extension of the carbonising plant to a capacity of 5 mill. cu.ft. per day at the Partington works, and 5.8 mill. cu.ft. per day at the Bradford Road works, to replace the 4 mill. horizontal plant, now in a state of complete disintegration and hopelessly uneconomic. In addition, orders were passed for a 6-mill. C.W.G. plant at Partington, this being tied up with the agreement with Petrocarbon, Ltd., for the taking in of their tail gas from the oil cracking plant. This agreement, in fact, led to the siting of the Petrocarbon works adjacent to Partington. The adjacent undertakings forming the group had their own problems to deal with and, as mentioned, Salford had had a particularly difficult time. Some construction had to be done during the war, and came into operation just before the close of hostilities, and in addition the 4 mill. cu.ft. per day vertical plant approved by the Salford Gas Committee in 1946 did not go into operation until December, 1951.

At Altrincham there was now a considerable industrial load, quite apart from the growing residential area, and the Altrincham Gas Company proposed to extend the existing carbonising plant by 6 mill. cu.ft. per day. The load at Stretford was preponderantly industrial and their problem was one of storage rather than output. The five-day week becoming general in the industrial world greatly intensified their difficulties. The Knutsford and Wilmslow undertakings both were under capacity, and both required a considerable amount of money spending on them.

Grouping

In forming the Manchester Group, the North Western Gas Board adopted a strictly logical arrangement, which geographical considerations had, in large measure, already indicated. There were, as we have seen, some interconnecting gas mains between all these undertakings, apart from the connections used for transferring gas to the Stockport undertaking and from Oldham. The need for immediate action by the Board was apparent, if the developments now taking place at the various undertakings were to be co-ordinated as a whole and result in a coherent and efficient group for the benefit of the public.

Far-reaching decisions, involving each of the undertakings, had to be made at once, and to add to the difficulties was the unknown industrial future, for while demand continued to expand in a gratifying manner there were indications in many quarters of slump; nor was the position helped along by the international situation and the re-intensified drive for armaments.

Production

It was evident from the outset that until all new carbonising plant projected was working there would be difficulty in maintaining adequate pressures. There was little margin of plant to meet any increase in consumption. In the first instance a complete survey was made of every piece of plant in the whole of the group, and an assessment made of the maximum carbonising potential available. This, in itself, was not enough, and during each winter it was necessary to be in constant hourly touch with all stocks, so that there could be no relaxation due to the lack of plant, to meet any sudden demand. It was not economic to attempt to modernise both the Knutsford and Wilmslow undertakings, and it was decided, as soon as the position allowed, that these two works should be closed down and supplied in bulk from the Group. Having in mind the integration of the Group as a whole and the subsequent free interchange of gas then possible, remembering particularly the future development of Partington as a major station, it was decided against any further development at Altrincham. Particular pride was taken in the fact that pressures were maintained, but this was only due to the constant and unceasing efforts put in by all the staff and employees within the Group.

I felt, Manchester being the biggest undertaking within the Group, that our planning and technical control should operate from Manchester. We were aware that more gas could be obtained from our carbonising plant, but this could only be achieved by adequate technical control. Again it was obvious that complete co-ordination should exist, and to that end a temporary control room was set up where estimated makes and consumptions were programmed for the whole of the group well in advance. Any deviation to the make on any particular works could only be carried out with the consent of the control office, who acted directly under the production engineer and his immediate staff. This subsequently has been amended and now we have gas controllers set up at our Gaythorn works, which we consider the heartbeat of our distribution system.

The formation of the Manchester Group entailed amalgamation of four separate undertakings, controlling in all eight productive stations. The method of carbonising control varied from works to works and the existing system of control was not giving the efficiencies that were desired. The necessity for closer supervision was a factor that could not be ignored and at the first available opportunity permission was obtained from the Board to put in hand our plan of control.

In the first instance a group carbonising assistant was appointed, and at each works a carbonising superintendent appointed to work under the station engineer and in close contact with the group carbonising assistant. It must be remembered that in some of the larger of the Manchester works there are as many as five different retort houses, and we went a step further and put into each retort house a carbonising assistant, who was responsible for the efficient working of that house alone. These carbonising assistants were, in the main, student gas engineers, who were employed in the retort houses during the final period of their pupilage and had already some considerable experience of laboratory work and ancillary plant control. The carbonising results of each works are examined carefully each week and, where we think there is any falling off of efficiencies, it is then the duty of the group carbonising assistant to work in conjunction with each station engineer so that the results from each and every plant are brought back as soon as possible to the desired optimum.

Retort Maintenance

It became obvious that there must be some planned retort maintenance, but this must now be done on a group basis, and in consequence a further survey of the repairs for the whole of the group was made and a repair programme established for five years in advance. To indicate the magnitude of this work, some 28 mill. cu.ft. per day of plant was off for repair during the summer of 1952. During this last year the Manchester Group was called upon to enlarge its field of operation by supplying gas to the Mid-Cheshire Group, the Bolton Group, and the Oldham/Rochdale Group; and during this coming winter, Manchester will be expected to supply approximately 10 mill. cu.ft. of gas per day as 'export gas.'

This again entailed co-ordination with the groups concerned and, having established requirements from every group, we set out to plan our reconstruction work and the 'coming in' of repair plant, to meet all demands of the Manchester Group and its exports, and while it may be assumed that we have increased our technical staff to meet our requirements, I give a table of fuel efficiencies within the Group since 1949 (Table I) together with the details of coal carbonised (Table II), and the estimated saving in coal during the period 1949-53. It think it can be agreed that the small increase of technical staff is more than offset by the ultimate saving in coal carbonised.

Chemical Control

The larger Manchester undertaking, prior to vesting day, had a chief chemist and the nucleus of a central laboratory situated at Gaythorn, a works no longer in production. Each of the Manchester manufacturing stations had a works chemist, working under the control of the station engineer, as had the Salford, Stretford, and Altrincham undertakings. These conditions continued with little change until the chief chemist to the old Manchester undertaking retired in October, 1951, and to fit in with our scheme of re-organisation a chief chemist to the group was appointed in March, 1952. The central laboratory at Gaythorn has been largely re-equipped and is in the process of enlargement.

I view the centralisation of testing with considerable caution, but it is clearly realised that certain types of work require specialised and expensive apparatus, and oil and paint testing, for example, are better and more economically centralised. The Gaythorn laboratory has been equipped for coal testing, and females have been engaged for this work and are proving very satisfactory and we are, at the moment, in addition testing 40 coals a month for several of the smaller groups. Girls of 16 years of age are satisfactorily doing gas and bomb calorimetry, proximate analyses of coal, and Gray King assays. In addition, tests are exchanged with the works in order to ensure uniformity of procedure and results. Investigations and analyses of a special nature are performed at the central laboratory, and development and research work is envisaged in the near future as it is intended to equip a refractory and testing laboratory, in conjunction with the requirements of the technical and planning division.

TABLE 1.—Gas Manufacture—Fuel Expenditure Index for the years ended March 31, 1949 to 1953

Works or Undertaking	1949	1950	1951	1952	1953	June Quarter 1953-54
Rochdale Road	27.99	26,23	26.75	19.30	17.30	17.30
Bradford Road	35.29	33.73	30.98	26.75	25.02	19.26
Partington	34.67	33.39	34.35	30.26	28.41	25.04
Manchester Undertaking	33.89	32.01	30.80	25.89	24.78	20.06
Salford	31.24	31.54	30.41	28.97	19.90	19.80
Stretford	25.83	26.37	30.56	26.21	28.67	28.95
Altrincham	30.03	35.94	28.45	28.43	24.65	20.78
Wilmslow	48.16	48.46	37.06	52.46	—	—
Knutsford	39.00	39.00	38.64	—	—	—
Group Average	31.71	30.94	30.80	26.61	24.69	21.81

TABLE 2.—Details of Coal Carbonised and Coal Gas made prior to Benzole Extraction

Year Ending 31st March	Total Coal Gas Made Therms	Group Totals Coal Carbonised Tons	Therms per ton of Coal	Coal Saving compared with 1949 Results Tons
1949	69,257,149	973,397	71.15	—
1950	67,360,637	953,504	70.64	– 6,764
1951	72,264,075	1,025,998	70.43	– 10,341
1952	73,441,920	991,029	74.11	41,182
1953	80,111,526	1,016,128	78.84	109,823
			Net Saving since vesting	133,900

As far as possible each works is encouraged to stand on its own feet and is given a maximum of autonomy, and this applies to the works laboratories. The principal works chemist is directly responsible to the station engineer, and it is natural that we should find that procedure varies considerably, and this also applies to chemical control. The difficulties are largely due to the variation in type of plant and the personal experience of the station engineer and his chemist, and in some cases to long-seated tradition. Our aim is not to attain uniformity for its own sake but to retain all that is good and change what is bad. By careful co-ordination the experience in one works is made available for the others.

The group chief chemist may, at any time, call for special investigations on any one works, or take exception to the method of operation of certain plant or laboratories. In such cases his approach is through the station engineer, thus avoiding any question of dual control over the station chemist, and where necessary and by agreement with the station engineer investigations are carried out on any special problem.

Training and Education

The group chief chemist, through the production engineer, is responsible to me for the training and education of all technical students on the production side. These students are recruited from local grammar schools after taking the General Certificate of Education and they are generally divided into three classes:—

(*a*) Those aiming for the Associate Membership Examination of the Institution of Gas Engineers.
(*b*) Those aiming for a specialised chemical or chemical engineering qualification.
(*c*) Those aiming for a specialised structural engineering qualification.

Our aim is to give all these students experience and training in all departments on the production side. It is obvious, however, that the time spent in the various departments will differ with the three types of students. We feel a definite obligation towards these pupils and their education is carefully planned. In this way we hope to train qualified personnel for the future. We have under consideration also limited recruitment of staff from the universities, as development and necessity require.

Construction and Maintenance

A new drawing office was built and was ready for occupation in early 1951 and it was decided this drawing office would house the necessary draughtsmen required for planning and development within our own Group. I would like to point out, however, that apart from our early difficulties of day-to-day gasmaking, there was a very heavy constructional scheme in being, and we were building approximately some 15 mill. cu.ft. of coal gas plant together with the necessary coal handling, coke screening, and all ancillary equipment—*i.e.*, washing plant, etc., together with two 3-mill. carburetted water gas plants at our Bradford Road works. This totals some 21 mill. cu.ft. of gas per day and is, in itself, a new gasworks of no mean size.

It was not our intention to build up a big staff, as we knew that within two or three years the amount of new work would materially decrease; therefore drawing office staff was held at a minimum.

Owing to the vicious increases in consumptions at the particular time and the perilous condition of both 'A' and 'B' houses of horizontals at our Bradford Road works, we felt that 'A' house should be demolished and completely reconstructed. The magnitude of this work, on top of all that we had in hand, made it impossible for us to cope, and we sought the assistance of the technical and planning division who took over the design and detail of this newly reconstructed 'A' house to an ultimate design of five mill. cu.ft. of gas per day.

It was also the Board's policy that any future extension within the greater Manchester area should take place at Partington, and a scheme was prepared for a new coke oven unit alongside the existing works at Partington, and there again, owing to our heavy commitments, it was agreed that the Board take over the design and preparation in detail of the new coke oven plant, together with all ancillaries. This has enabled us to manage the existing reconstruction work without materially increasing our drawing office staff. In addition to all the above, a new 2-mill. gasholder is being erected at Partington and a scheme prepared for a 5-mill. holder to be erected at Stretford to assist the difficult storage position existing there.

All new work, specifications, layout drawings, bills of quantities, etc., are prepared at the central drawing office, and where a station engineer finds he requires assistance on day to day detail then a draughtsman is seconded to the works in question.

There are within the Group 32 gasholders varying in size from 250,000 to 10 mill. cu.ft., and a complete register of all gasholders is maintained, and repairs, painting, etc., scheduled. The gasholder maintenance scheme is under the supervision of one member of the staff so that never at any time are we faced with gasholders off for repair which would materially affect or endanger the stock position.

The 10-mill. holder at Bradford Road has been off for a major repair during the present summer, and has reduced the effective storage by 33%. The new crown and inner lift has been completed as programmed.

We are also setting up our own group painting section, which comes under the orbit of the constructional engineer, and a supervisor in charge of this work will again act in close liaison with the station engineer. He will prepare all specifications for major painting schemes and submit details in advance for the annual estimates. We are endeavouring to do by direct labour some carbonising repairs in a small way, but intend to proceed very carefully in this respect before we attempt any major work by direct labour on retort settings.

The Technical and Planning Division are already carrying out the repairs to the 6-mill. cu.ft. per day West vertical plant at our Partington works by direct labour.

The new compression plant at Partington, together with all main connections, was programmed in our own drawing office. Once again, it was felt that we could not handle the design and erection of the building. This work, together with the new power generating scheme at Partington, has been prepared by the Technical and Planning Division.

In the final scheme it therefore appears that any major extension of carbonising will take place at Partington. There are, however, tentative schemes for the provision of carburetted water gas plants at both Stretford and Salford, should the need arise.

Distribution

As in production, the distribution department had its own problems to face upon nationalisation, and I foresaw, in the very early stages, the necessity for a completely integrated scheme for the exchange of gas between manufacturing stations and holder stations within the group. The Group was fortunate in that already there existed 36-in. transmission mains linking Partington with Gaythorn and Gaythorn with Bradford Road. The Partington/Gaythorn main was within reasonable distance of the Salford works, and within two years a connection between the 36 in. main and Salford had been made. The Stretford gasworks had already been connected to the 36-in. Partington/Gaythorn main as a wartime emergency measure.

A transmission main connected Stretford to Altrincham and the next step was to connect Partington and Altrincham works. By early 1952 an 18-in. diameter H.P. main had been laid between these two works. Since Rochdale Road had for many years been connected to Bradford Road by a 30-in. transmission main, interlinkage between all production stations and some storage stations in the group had now been established.

Two major problems had still to be dealt with (1) the provision of adequate compression plant to deal with the ever increasing bulk movement of gas between production and holder station, and (2) the planning and provision of boosting plant to make storage fully effective. In considering the provision of compression plant, a much wider view had to be taken than the consideration solely of the needs of the Manchester Group. Obviously, the planning of the bulk distributing system of the Manchester Group

had to be considered concurrently with the production capacity of the group and future needs of neighbouring groups. Discussions took place at area level as to the present and future estimated requirements of Mid-Cheshire, North Cheshire, South Lancashire, Oldham/Rochdale, Bury/Rossendale, and Bolton groups, and it was decided that a compressor station should be built at Partington to meet the needs of a number of these groups.

The layout of this station provides for the installation of four compressors, each capable of supplying 500,000 cu.ft. per hour with an outlet pressure of 10 lb. per sq. in. three compressors each capable of supplying 250,000 cu.ft. per hour at 10 lb. per sq.in. and two compressors each capable of supplying 166,000 cu.ft. per hour at 20 lb. per sq.in. Four of these compressors have already been installed. All the electric power for these compressors is supplied at 6,600 volts and a number of the machines are of the variable speed type fitted with induction regulators. The speeds of the motors can be automatically varied to maintain a pre-determined constant pressure on the outlets of these machines.

In addition, plans were made to lay a new 36-in., part 24-in., part 18-in. main to (*a*) reinforce the outlying areas of the Manchester Group and (*b*) to supply gas into Bolton, Bury, and Oldham/Rochdale groups. This work was commenced in 1952 and at the time of writing is virtually complete.

In 1951 a 24-in., part 15-in., main was laid from our Salford gasworks to reinforce the Prestwich district, the Clifton Valley Industrial Estate, and to give a bulk supply into the Bolton Group. This work was completed at the end of 1952. At the same time, new compression plant was installed at Salford to enable gas to be pumped to required stations. It speedily became obvious that gas would have to be supplied into Mid-Cheshire and in 1951 a 12¼-in. main was laid from Altrincham to Knutsford and the Mid-Cheshire Group. At first only part supply was provided, the remainder of the gas being made by the existing gasworks in the Mid-Cheshire Group, but in June, 1953, the manufacture of gas at Winsford, Sandbach, Middlewich, and Northwich ceased and all gas to these towns and intervening villages is now supplied from the Manchester Group.

To enable this to be done, special compression plant had been installed at the new Partington compressor house, but the demands of gas in the Mid-Cheshire area are increasing at such a rate that plans are being made for the provision of new compression plant at Altrincham works. Further connections between works outside the Manchester Group were the Bradford/Hollinwood 15-in. main and the Bradford Road/Denton 15-in. interlinkage, both laid in 1952. Also in 1952 an 8-in. H.P. main was laid to Lymm in the South Lancashire Group, as a result of which it was later possible to close down entirely the making of gas at Lymm Works.

Recent minor reinforcements have been a connection from our existing district feeder main on the boundary between Manchester and Stockport at Crossley Road, from which a supply was given into the Stockport mains to assist in maintaining the demands of McVitie and Price and into the Stockport Group housing estate at Brookfield.

Boosting Plant

As the gas loads increased, so the frictional loss in the supply mains increased in proportion, and it became necessary, particularly at peak hours, to increase the outlet pressures on the station and district governors to attempt to maintain reasonable pressures at more remote points. In many cases it was found that the holders could throw pressure sufficient only to maintain inlet to governor pressure at a reasonably high level at peak loads when the holders were fully cupped and, in all cases, the pressure shown by the top lifts of holders was inadequate. Plans, had, therefore, to be made for the installation of boosting equipment to make full use of holder storage.

The two outstanding examples of the need for the provision of boosters were (1) at Salford works, (2) at Gaythorn holder station. In the case of Salford, it was found necessary to maintain two large holders in their flying lifts in order to keep the governors supplied at peak hours and considerable difficulty was encountered in so arranging the intake into the station from Partington to maintain this position. A 1-mill. cu.ft. per hour booster (electrically driven) is being installed in the autumn of this year in order that the whole storage capacity at Salford can be made usable.

At Gaythorn, of the 4 mill. cu.ft. of gas which can be stored, only 1.4 mill. can be used at peak periods, and since the output at peak hours at this station is in the order of 1.8 mill. cu.ft., it will be seen that this station has to be supplied at high rates of flow during the peak hours, in order to prevent holders uncupping. Plans have been developed for the installation of a 1-mill. and two 500,000 cu.ft. per hour boosters, and it is hoped that these will be installed next year.

To make the best possible use of the large number of interlinkages, both within the group and to neighbouring groups, it is essential that a very careful watch is kept on the movement of gas from the manufacturing stations to the various holder stations. To obtain the optimum economic conditions it is desirable that gas be pumped at average rates and at pressures as low as possible consistent with proper terminal pressures. Heavy peak loading of the mains systems should be avoided wherever possible. It was soon found that the only reasonable way to maintain this careful watch was to employ control supervisors on shift, day and night, at a control centre. All makes, stocks, consumptions, and flows of gas are recorded at this centre and all instructions to the various stations for movement of gas are handled from here. Thus, at all times, the stock position in the Group is known and any potential difficulties are foreseen and steps are taken well in advance to avoid them.

[Other sections of the paper covered industrial gas; sales and service; accountancy; transport; coke sales; and welfare.]

COAL OUTPUT

COAL OUTPUT is disappointing, but the stocks position continues to improve. Output of deep-mined coal during the week ended October 24 was up by 65,500 tons, but the total was 10,600 tons less than that of the corresponding week of last year. Open-cast output improved by 24,500 tons; compared with the week ended October 25, 1952, the total was 16,600 tons lower.

In the first 42 weeks of the year, total output of coal was 178,872,200 tons, which compares with 181,531,300 tons in the corresponding period of 1952. The gap between the totals of the two years, which has widened in recent weeks, is thus 2,659,100 tons, deep-mined output being down by 2,061,900 tons and open-cast output by 597,200 tons.

Mild weather has done much to aid the stocks position. The current level of 18,360,000 tons compares with 19,132,000 tons at the corresponding time a year ago. The industry's manpower continues to decline.

There were 711,300 wage-earners on colliery books on October 17, against 719,000 on October 18, 1952. Total absenteeism (all workers) in the week ended October 17 was 12.41%, compared with 12.40% in the week ended October 18, 1952.

NEW BRITISH STANDARD

THE British Standards Institution has issued a revision of B.S. 974, 'Symbols for use on flow diagrams of chemical and petroleum plant.' Since the standard was originally published in 1941, several other standards for graphical symbols in branches of engineering allied to chemical engineering have been issued. Certain discrepancies between corresponding symbols necessitated a revision of B.S. 974:1941.

The committee charged with this task proceeded on the principle that, in order to keep the number of basic symbols to a minimum, only those symbols most necessary should be adopted, reduced to their simplest form, and be sufficiently pictorial to enable the units of the plant so represented to be readily recognised. Symbols are intended to indicate the function of a unit of plant, although they may differ in shape from the form of construction of various types of such units all fulfilling the same purpose. Copies of this standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1, price 3s. 6d.

Institution Examinations 1953

Report of the Board of Examiners

THE BOARD OF EXAMINERS has issued its report on the 1953 examinations of the Institution of Gas Engineers. The boards of examiners and assessors were: *Major Courses:* S. K. Hawthorn (Birmingham); F. S. Charnley (Leeds); W. A. Evetts, M.C. (Watford); J. C. Hogg (Bournemouth); J. K. Mitchell (Dudley); J. A. Tomes (Stourbridge); L. G. Townsend (Birkenhead); S. L. Wright (Cardiff) (Gas Engineering, Manufacture). C. D. Shann (London); L. S. Crowle (Cheadle Hulme); F. Harvey (Walsall); W. Johnson (London); W. J. Parsons (Birmingham); W. G. Phillips (Watford); A. J. Skinner, M.C. (London) (Gas Engineering, Supply). Assessors: Gas Engineering (Manufacture) and (Supply). West of Scotland: J. M. Dow (Uddingston); W. M. Gledhill (Stirling). East of Scotland: D. Beavis (Edinburgh); W. C. Campbell (Paisley).

The report states that the number of candidates who entered for the Higher Grade examinations in Gas Engineering (Manufacture) and (Supply) was rather lower than had been expected, particularly as this was the last opportunity of qualifying under the old education regulations. The standard exhibited by the majority of candidates, both in the Manufacture and Supply examinations, was unusually low and the percentage of failures was higher than ever before. Most of the candidates attempted the four questions required, so that there was no evidence to show that the question papers presented any peculiar difficulty, or that the time available was insufficient. The examiners say they can only assume that the bulk of the candidates were insufficiently prepared, or have not the capacity to assimilate the technical knowledge required to pass the examination.

In spite of the high percentage of failures, the examiners feel that the general presentation of answers, the spelling, and the standard of sketching showed an improvement over previous years. Further, although there were a few notable exceptions, the candidates in general refrained from introducing irrelevant padding and endeavoured to answer the questions in a concise manner. This year's lamentably poor results are, in consequence, attributable almost entirely to the candidates having a superficial and inadequate knowledge of the subject.

The new regulations for the award of diploma became operative this year. Two candidates, one in Gas Engineering (Manufacture) and one in Gas Engineering (Supply), submitted theses of too low a standard to be accepted.

The standard of answers was disappointingly low, 69% of the candidates failing to reach 50%, and only two attaining 70%. Of the 31% of candidates who reached pass standard, the majority did so by narrow margins.

COMPARATIVE SCHEDULE OF EXAMINATION CANDIDATES

Subject	Grade	1952		1953	
		Internal	External	Internal	External
GAS ENGINEERING (MANUFACTURE)	Higher	128	87	86	85
	Diploma	—	19	—	1
GAS ENGINEERING (SUPPLY)	Higher	165	63	67	61
	Diploma	—	13	—	1
TOTAL		293	182	153	148
GRAND TOTAL		475		301	

HIGHER GRADE GAS ENGINEERING (MANUFACTURE)

Number of Candidates who sat for the Examination:

Class	Internal—86		External—85		Total—171	
	No.	%	No.	%	No.	%
1st with Distinction	—	—	—	—	—	—
1st	1	1.2	1	1.2	2	1.2
2nd	21	24.4	30	35.3	51	29.8
Fail	64	74.4	54	63.5	118	69.0

HIGHER GRADE GAS ENGINEERING (SUPPLY)

Number of Candidates who sat for the Examination:

Class	Internal—67		External—61		Total—128	
	No.	%	No.	%	No.	%
1st with Distinction	—	—	—	—	—	—
1st	—	—	—	—	—	—
2nd	15	22.4	21	34.4	36	28.1
Fail	52	77.6	40	65.6	92	71.9

Answers to some questions, notably those on the operation of purifiers, on water gas and on the treatment of gas liquor, showed that while certain primary points had been well memorised few candidates showed a sufficient practical insight or depth of knowledge to give full answers; a simple calculation was beyond the ability of most candidates, and some quite impossible answers were submitted. Answers to the questions on fuel consumption in continuous vertical retorts and static retort installations and on a layout of coal handling plant showed lack of ability to discuss differences in two systems or to justify the types of handling plant chosen.

Poor Results

The poor results obtained by the candidates who entered for the examination in Higher Grade Gas Engineering (Supply) caused the examiners some concern. No candidate reached first class standard, or even a standard which might be regarded as bordering on first class level, and of the 36 candidates who gained second class passes no less than 24 did so by the narrow margin of four marks. There was no evidence from the number of attempts made to answer questions in each group or from the average marks awarded to indicate that the examination was any more difficult than in previous years or that any particular group presented undue hardship. Neither was there any stiffening of the marking of the scripts. The examiners' general impression is that too many of the candidates had a superficial knowledge of relatively unimportant details, but lacked knowledge of fundamental principles. There was evidence of having relied on memorising formulæ and diagrams without understanding them or being able to apply reasoning to them.

The following examinations were conducted: (a) Diplomas in Gas Engineering (Manufacture) and Gas Engineering (Supply); (b) Associate Membership Examination (jointly with the Institution of Civil Engineers); (c) Higher Grade examinations in Gas Engineering (Manufacture) and Gas Engineering (Supply); and (d) Principles and Practice of Gas Salesmanship for the Certificate in Gas Salesmanship and Consumer Service. There were no successful candidates for the Diplomas in Gas Engineering (Manufacture and (Supply).

The names of the candidates who have qualified for the award of certificates under (b) and (c) are summarised. Those qualifying under (d) will be published later after the oral examinations.

Associate Membership Examination

Higher Grade Certificates

Gas Engineering (Supply)

Collieson, A. F. Wallasey

Including candidates who passed the main subject examination in previous years and have now qualified for the award of certificates by completing outstanding ancillary subjects)

EXTERNAL CANDIDATES

Gas Engineering (Manufacture)

Class	Name	Town
First	Holliss, G. J.	Weston-super-Mare
,,	Miller, F.	Darwen
,,	Stubbs, A.	Sheffield
Second	Baker, D. W.	Gloucester
,,	Baldwin, W. T.	Farnham
,,	Bassett, H. B.	Birmingham
,,	Bevan, B. A.	Bristol
,,	Charlton, R.	Grimsby
Second	Clark, H.	Blackpool
,,	Craddock, J. V.	Stoke-on-Trent
,,	Draper, P. A.	Torquay
,,	Egan, D. G.	Newport
,,	Foote, A. L.	Retford
,,	Hall, I.	St. Helens
,,	Hillsdon, R.	Keswick
,,	Marriott, T. A.	Bradford
,,	Narborough, W. T.	Weston-super-Mare
,,	Pottenger, R. A. W.	Hull
,,	Rae, R.	Aberdeen.
,,	Searle, D. A.	Bedford
,,	Smallridge, A. V. G.	Exeter
,,	Smith, F. E.	Tamworth
,,	Stone, D. J.	Newcastle-under-Lyme
,,	Tammadge, A. A.	Congleton
,,	Taylor, B. G. S.	Brixham
,,	Walters, R. J.	Cliftonville
,,	Ward, R. L.	Weston-super-Mare

Class	Name	Town
Second	Wilson, D. N.	St. Helens
,,	Young, D. A.	Bramhall
,,	Yule, J. I.	Hebden Bridge

Gas Engineering (Supply)

Class	Name	Town
Second	Cross, W.	St. Helens
,,	Hodgson, J.	Stockton-on-Tees
,,	Hutchins, P.	Oxford
,,	Lang, J. G.	Aberavon
,,	Lyons, L. W.	Birkenhead
,,	Palmer, J.	Irby
,,	Perrin, A. J.	Birkenhead
,,	Rann, C. H.	Normanton
,,	Roberts, L. G.	Widnes
,,	Robinson, A. E.	Harrogate
,,	Smith, J. H.	Pontefract
,,	Whiten, W. E.	Nottingham
,,	Williams, W. A.	Connah's Quay

INTERNAL CANDIDATES

Gas Engineering (Manufacture)

Class	Name	College
Second	Albone, T.	Halifax
,,	Artus, G. S.	Bradford
,,	Boardman, F. G.	Cardiff
,,	Gooch, B. W. R.	Birmingham
,,	Grosse, D. F.	Westminster
,,	Hopkins, G. T.	Birmingham
,,	Keillor, F. B.	Glasgow
,,	King, G. H.	Westminster
,,	Mitchell, D.	Burnley
,,	Newman, H. J.	Cardiff
,,	Philip, K. T.	Dundee
,,	Pickard, J. D.	Cardiff
,,	Pollard, K. R.	Bradford
,,	Poulson, R. A.	Birmingham
,,	Richards, A. N.	Leicester
,,	Savage, A.	Burnley
,,	Sharman, R. B.	Birmingham
,,	Simpson, A.	Glasgow
,,	Smart, D. T.	Westminster
,,	Steele, M. E.	Birmingham
,,	Stringer, D.	Huddersfield
,,	Turnbull, J. S.	Newcastle-on-Tyne
,,	Walker, H.	Burnley
,,	Walker, P. N.	Birmingham
,,	Winn, P.	Glasgow
,,	Wisewould, J. E.	Westminster

Gas Engineering (Supply)

Class	Name	College
Second	Buchanan, K. M.	Edinburgh
,,	Chalcraft, M.	Bradford
,,	Endsor, D. F.	Westminster
,,	Ferry, A. R.	Westminster
,,	Halliday, S.	Birmingham
,,	Hatfield, J.	Derby
,,	Hollingshead, A. J.	Westminster
,,	Jellis, A. J.	Bristol
,,	Malcolm, R. E.	Bradford
,,	Marsh, H. W.	Tottenham
,,	Pearne, S. P. L.	Westminster
,,	Reece, D. G. T.	Tottenham
,,	Rendle, A. J.	Tottenham
,,	Smith, A. J. R.	Brighton
,,	Smith, W. F.	Edinburgh
,,	Swinson, H. P.	Tottenham
,,	Sykes, E.	Huddersfield
,,	Whitehead, B. J.	Stoke-on-Trent

Ordinary Grade Certificates

The ordinary grade examinations terminated in 1951, but the following candidates who passed the main subject examinations have since qualified for the award of certificates by completing outstanding ancillary subjects.

EXTERNAL CANDIDATES

Gas Engineering (Manufacture)

Class	Name	Town
Second	Marriott, T. A.	Bradford
,,	Tammadge, A. A.	Congleton

Gas Engineering (Supply)

Class	Name	Town
Second	Jackson, D.	Carlisle

INTERNAL CANDIDATES

Gas Engineering (Manufacture)

Class	Name	College
Second	Keillor, F. B.	Glasgow
,,	Mitchell, D.	Burnley
,,	Sharman, R. B.	Birmingham
,,	Steele, M. E.	Birmingham
,,	Whiting, L. C.	Westminster

Gas Engineering (Supply)

Class	Name	College
Second	Donne, G.	Brighton
,,	James, R. H.	East Ham
,,	Keillor, F. B.	Glasgow
,,	Kick, F. W.	Westminster
,,	Peacock, W. A. J.	East Ham

COKE OVEN MANAGERS' ANNUAL DINNER

BEFORE the loyal toast at the Coke Oven Managers' Association annual dinner on October 30 at the Waldorf Hotel, London, two telegrams were read. The first was to Her Majesty the Queen from the President. It read: 'The President and Members of the Coke Oven Managers' Association assembled in London for their 38th Annual Meeting, present their loyal and humble greetings in this your Coronation Year.' The reply, which had been received from the Queen's secretary shortly afterwards, read: 'To the President of the Coke Oven Managers' Association. Please convey to all members of the Coke Oven Managers' Association assembled in London, the sincere thanks of the Queen for their kind and loyal message.'

SIR SAMUEL ROBERTS proposed: 'The Coke Oven Managers' Association.' He said he owed much to coke and coke ovens. The first thing he remembered about the industry was an offer that came from a firm of oven builders to build ovens, work them for five years and then hand them over free of cost to the colliery on whose grounds the ovens were built. It occurred to his family at the time that if it was good enough for a commercial firm to put down their money for five years it would be much better if they could find the money to do it themselves. They did, and for 20 years they ran a small battery. Sir Samuel said he had been thinking of the difference between those days and the present time, and although he was not a technical man, and, therefore, possibly, those present would disagree with him, the look of a by-product plant and of a battery of ovens had hardly changed in 40 years. But there had certainly been a change on the sales side. Gas was not on the accounts in those days, and now it was one of the most important products of their ovens.

A Square Deal

Speaking as an independent oven owner, he admitted that at first he was a little frightened as to what would be the attitude of the area coal board towards a small independent concern, which was dependent on suppliers for the quality and quantity of the coke. But he was glad to say after a good many years' experience that the Coal Board had given the independent ovens a square deal.

When the tribunal was trying to decide the global sum that was to be handed out to the various collieries, someone had produced the argument that coal was really coming towards its end; that atomic energy would take its place, and therefore the value of colliery concerns would be discounted by a number of years. He knew that some of them thought that the total global sum was not too much, and if it had not been for the atomic arguments it might have been larger. He thought it would be a long time before atomic energy would relieve any of those present of their jobs. If coal and coke, however, were to be superseded by atomic energy; if coal and coke were to go with wood and charcoal as fuels of the past; they could be assured that it was coal and coke that had made Britain what it was.

MR. W. A. P. HOSKIN, the President, replied. He said it was one of the proudest days of his life, a day on which he had been chosen by his colleagues with whom he had worked for the past 18 years for the highest honour they could bestow upon him. It gave him great joy and at the same time humbled him when he thought of the responsibilities of high office. Mr. Hoskin said the Coke Oven Managers' Association was not large when compared with some of the other technical associations of the country, but he doubted if any association could claim as high a percentage membership as they enjoyed.

Education and Initiative

Turning to education, Mr. Hoskin said in between the wars, in the educational field, the coke oven managers did a great deal of what little was done in industrial education. They remembered the interest which was stimulated in the gold and silver medals that were presented, the plaques, the associate members' prizes. They had a record unequalled in youth welfare. He would not decry modern youth, in fact, he was far more concerned about their initiative being killed by all the paraphernalia of modern living.

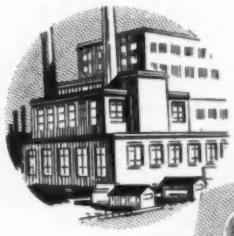
'Our Guests' was proposed by MR. G. A. HUNTER, M.INST.GAS E., a Vice-President of the Coke Oven Managers' Association.

MR. W. ROBSON BROWN, M.P., Chairman of the Education Committee, British Coking Industry Association, in responding to the toast, said they were unique in that the British Coking Industry Association had got something to be proud of in its leadership, and the imaginative way in which they had handled industrial education. Assembled before him, he said, were the managers of today who were prepared to give a helping hand to the possible managers of tomorrow. The British Coking Industry Association and its executive committee had given to the education committee plenary powers in every way to spend what they wished, do what they wished, and pioneer in whatever they desired, and he knew of no other organisation in Great Britain which was prepared to do that.

Mr. Brown said he wanted to see the managers of their industry receive more recognition of the work they were doing, and receive an adequate reward. A labourer should be worthy of his hire, 'even if he is a manager,' he added.

MR. R. RAY, a past President of the Association, proposed the health of the President, and in wishing on the Association's behalf a happy and successful year he added his personal wish that Mr. Hoskin would continue to forge ahead in his profession, of which he was already a bright and shining light.

Young Competitors in a first round of the Gas Council's 'Youth in the Kitchen' Cookery Competition were on the air in the Light Programme of the B.B.C. on Tuesday, October 20, when their efforts were described in a 'live' broadcast in the 'Under 20 Parade' feature. The winner goes forward to the next round in this national competition, which is open to young people between the ages of 15 and 19 years. The finals will be held at the Royal Festival Hall, London, on April 6, 1954, when the 12 finalists from different parts of the country will cook before an invited audience.



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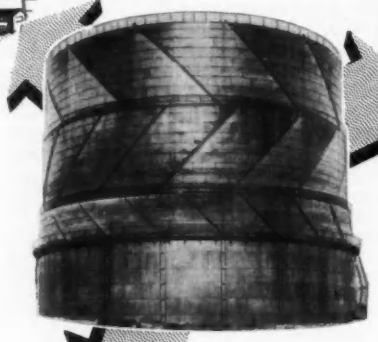

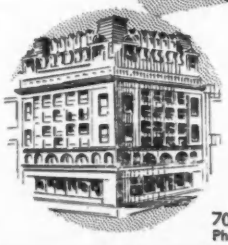

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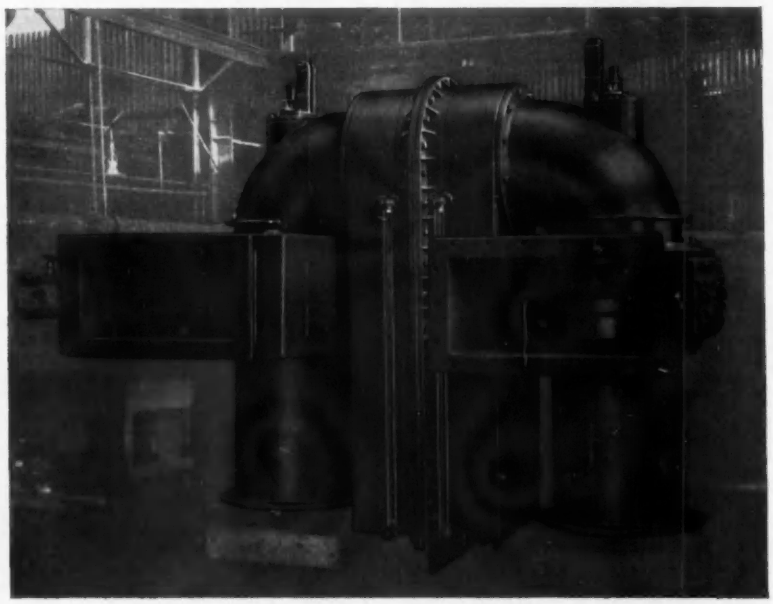

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Midland Juniors Visit Bryan Donkin Works

On October 22 about 70 members of the Midland Junior Gas Association visited the works of the Bryan Donkin Co. Ltd., at Chesterfield. Mr. R. T. Redfern, Managing Director, Mr. G. F. Chambers, Technical Director, and members of the staff were waiting to welcome the visitors.

After lunch Mr. REDFERN said it was an easy task for them to entertain the Midland Juniors and that it was a happy thought of Mr. J. A. Tomes, the President of the Association, to suggest such a visit. His company was signally honoured by the presence of the President of the Institution, Mr. J. T. Haynes, whom they were very pleased indeed to welcome. Mr. Haynes had travelled up from Bournemouth—in itself quite an effort. The year 1953 had been an eventful year of the company, and it was fitting that the Midland Junior Gas Association should visit them on their 150th anniversary. Although old-established the company was most progressive and very much alive to the requirements of the gas industry, which was moving rapidly. This, he suggested, was partly due to the Juniors in its ranks—young men with ideas. Works visits should be and could be of great assistance, not only to the junior but also to the manufacturer. During the tour of inspection of the works they would have an opportunity of seeing a new type of valve which was of German origin. When his company were considering publicising this valve as a slogan originally they decided to use—'This is the valve you have been waiting for.' But as customers had been waiting some time for certain valves the slogan was diplomatically altered; the word 'looking' being substituted for 'waiting.' Another new development on the distribution side was an electronic-operated control which Mr. Redfern claimed could be used for almost anything. It had been in operation for the first time the previous day. Retooling of the various departments continued, and the use of modern appliances backed by a strong nucleus of long service men enabled the company to maintain its stability and the quality of its products. With obvious pride Mr. Redfern stated that 177 of their employees were enrolled the previous week in the newly-formed Twenty-Five Year Club. Eight of these employees had served the company for over 50 years, and the average service of the whole was just over 36 years. The Midland Juniors were the first to be entertained in the works clubhouse, which had been opened only two months.

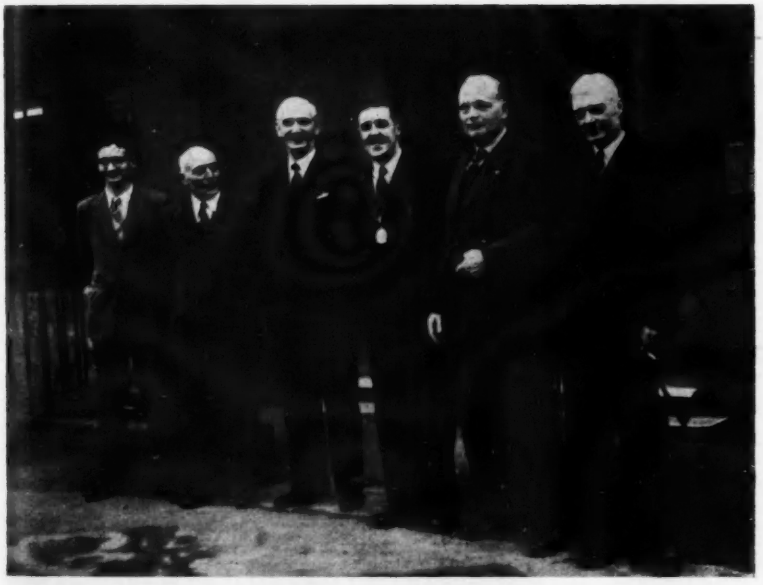
150 Years of Achievement

Mr. TOMES thanked Mr. Redfern for his warm welcome and said that members would already appreciate why he had been anxious for them to visit the Bryan Donkin works. It was eight years since the Association had last been there. He had received a copy of the firm's book recording their 150 years of achievement. (The book was reviewed in the 'GAS JOURNAL' earlier this year.) The firm of Bryan Donkin enjoyed a reputation second to none, that his Association had always been closely associated with the company. He specifically mentioned Mr. Fred Fennemore, the Midland representative of the company, and the friend of all Midland Juniors. Mr. Tomes took the opportunity of thanking the company for the hospitality arranged for the Juniors on their forthcoming trip to Paris. He concluded by saying that it was a tribute to the Association and to the company that Mr. Haynes was present.

Mr. HAYNES said that as a member of the Manchester Juniors for 45 years, and as President of the Institution of Gas Engineers, their parent body, he was glad to have the opportunity of meeting the Midland Juniors. He well remembered as a young man the thrill of visiting works such as Bryan Donkin's, picking up ideas, learning about new plant, and going back discussing what he had seen and heard with his workmates. The Juniors had the interest and enthusiasm to use new plant and make it work irrespective of initial snags, and they co-operated wholeheartedly with the manufacturers in this. He wished the Association and the Bryan Donkin Co. every success.

Parties were then formed to go round the works, each in charge of an experienced guide.

After tea Mr. TOMES thanked Mr. Redfern and staff for making the visit a memorable one. This was seconded by Mr. REYNOLDS, the Secretary of the Association.



The visit to the Bryan Donkin works. Left to right are J. G. Reynolds, H. J. Reynolds (Secretary of the Midland Junior Gas Association), J. T. Haynes (President of the Institution of Gas Engineers), J. A. Tomes (President of the Midland Juniors), R. T. Redfern (Managing Director, Bryan Donkin Co.) and G. F. Chambers (Technical Director, Bryan Donkin Co.).

The President of the Institution offers congratulations to Mrs. E. B. Booker, who works in the Core Department, on the occasion of her birthday and for her 42 years service with the firm. Mr. Tomes, President of the Midland Juniors, looks on.

Technical Assistance Mission

THE Organisation for European Economic Co-operation has arranged for a Technical Assistance Mission to visit a number of European countries to study methods of dealing with air and water pollution caused by the chemical industry. The mission consists of officials and industrialists concerned with these problems from Austria, Belgium, France, Germany, Portugal, Sweden, the United States and the United Kingdom.

While they are in this country the members of the mission will visit the Water Pollution Research Laboratory of the Department of Scientific and Industrial Research at Watford, and the works of Courtaulds (Preston), British Enka (Aintree), Shell (Stanlow), Monsanto Chemical (Ruabon), and May and Baker (Dagenham). The purpose is to enable member countries of O.E.E.C. to exchange knowledge of techniques and 'know-how.' The mission will report on the best European practice, and it may subsequently be decided to organise a mission to study the problem in the United States.

B.R.T.A.'s New President

MR. W. K. HUTCHISON, B.A., B.SC., Chairman of the South Eastern Gas Board, was elected President of the British Road Tar Association at its annual meeting on October 27, in succession to Mr. Stanley Robinson (Midland Tar Distillers, Ltd.), who retired after two years in office. Mr. Leslie O'Connor (representing coke ovens) and Major A. G. Saunders (representing tar distillers) were elected Vice-Presidents, and Mr. H. J. Carter was appointed Treasurer.

Some 255 members and guests attended the annual dinner at the May Fair Hotel, presided over by Mr. Stanley Robinson, the principal guest being Lord Mancroft, a Lord in Waiting.

MR. J. DAVIDSON PRATT, C.B.E., Chairman, who proposed the toast of the guests, said practically all the guests were customers in one way or another, although they might not think so. In the relationship of supplier and customer there was generally in these days a sordid financial motive, but that was not the case with the Association. As an Association they sold no tar; they sold nothing, but they gave technical service to all who used or desired to use the admirable product with which they were concerned. And the more they used that service, the better pleased they were. That technical service depended very largely on the research and experimental work which was carried out by the Road Research Laboratory and the D.S.I.R., with the very willing co-operation, which they acknowledged with gratitude, of the Ministry of Transport and the surveyors up and down the country.

Surveyors Congratulated

He congratulated all county and municipal surveyors on the wonderful road surfaces which they had been able to maintain in spite of the inadequate funds which were placed at their disposal.

The results of research were not being applied in practice as quickly as they would like to see. That was a criticism which had been levelled at every British industry, including the industry to which he really belonged—the chemical industry—during the past few years. We were a conservative nation—he was not speaking politically—and we were rather slow in picking up new ideas and applying them in practice. We could at least try to initiate the younger generation of road engineers into some of the newer methods which the work of the Road Research Laboratory had shown to be advantageous.

LORD MANCROFT, M.B.E., T.D., a Lord in Waiting, responding to the toast, said he was impressed with the work they were doing, and he paid his warm tribute to the Association, and to kindred organisations, for the determined way in which they went forward to improve and increase their technical efficiency and the service they gave to the users of their products.

Energy and Drive

MR. A. FLOYD, C.B.E., President, County Surveyors' Society, proposed the toast of the British Road Tar Association. He said the annual report showed that the problems of the chemical stability of road tar under traffic and the durability of their dense tar carpets were being attacked with energy and drive, and furthermore that as regards the realms of higher science connected with those things, the Association had shown in the recent International Road Tar Congress a remarkable leadership in the world.

While not so many years ago the rigid foundation with a thin layer of black mixture on top was the prevailing trend—he would not know whether it was bitumen or tar—the current tendency was towards multi-layer macadam construction associated with soil stabilisation, either in name or substance, and he was sure that increasing demands would be made on their products in consequence, and a wider range of technique in that direction might well be called for.

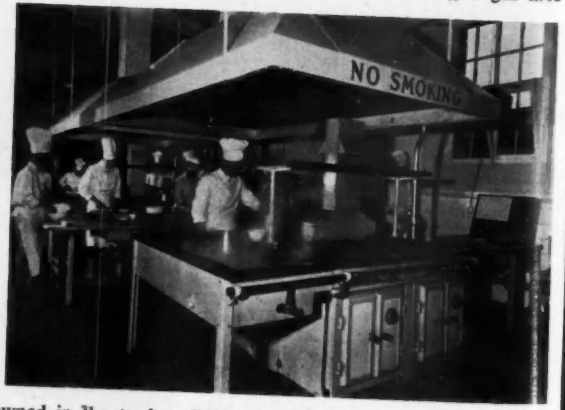
Although he learnt that Mr. Stanley Robinson was already past President of the Association—having relinquished his office earlier that day—his colleagues and guests would congratulate him on being the first Simon Pure tar distiller to be President, because former Presidents had been producers. Seeing that apparently the whole progress of the Association had depended on the progress of distillation he would have said that the honour had been too long delayed. His name had long been known to them in association with his most progressive firm in the Midlands, and his year of office had added distinction not only to himself but to the Association. Such an Association depended not only on the leadership of the President but on the drive, energy, enterprise and imagination of its permanent officers, and he felt it would be a cardinal omission on his part if he did not pay tribute from the users to the Secretary, Mr. MacCormack, the Technical Adviser, Mr. Cone, and last but by no means least to their Chairman, Mr. Davidson Pratt.

THE PRESIDENT (Mr. Stanley Robinson), responding to the toast, said tar would continue to improve in quality as a result of continuous research and experiment; it would continue to be used in increasing quantities; and it would continue to make its contribution to the safety of the roads. But it could not do everything. It could not, for example, build bridges or dual carriageways. It could only help. If we were to have safe roads, roads capable of carrying today's increasing traffic, money must be forthcoming. The Road Fund was instituted for the very purpose of road improvement and maintenance. Recently a prominent Frenchman said 'Roads like women are essential, and like women they cost much money to maintain.'

In conclusion he thanked the officials of the Association, all of whom did extremely good work. They were experts at their job and they did it with great enthusiasm. The members of the B.R.T.A. were extremely lucky in having such a fine team, for they made their work easy. What could he say about their Chairman that had not been said many times before? Mr. Davidson Pratt was a pivot around which everything seemed to revolve on oiled wheels. All he could say to him was 'Carry on, and we will love you more and more.'

CARDIFF COLLEGE INSTALLATION

WITH the installation of two Ascot instantaneous controlled hot water units which followed the replacement by new gas fired equipment of its old gas ranges and oven, the bakery, confectionery, and catering department of Cardiff College of Technology and Commerce is now really up-to-date and well equipped to deal with the 350 students who pass through each year.



General view of the catering department at Cardiff College of Technology, showing two central 4-oven gas ranges.

The College is renowned in the trade for its high standard of instruction and successes in competing for national awards. Its fame extends almost throughout the world, and at present students from Spain, Italy, Nigeria, and Canada are taking the two years course. They will on completion enter private business or become demonstrators, technologists, or craftsmen in their trades. During the last 12 months, in open national competitions, students from this college have won hundreds of gold and silver medals, and, in addition, scholarships worth thousands of pounds. At present seven students are under instruction, each of them from £150 scholarships won in open examinations last session. Gas appliances fitted are:

In the bakery: Two Cox's double-deck ovens incorporating a Vienna oven (for making rolls of that name), a gas fired Thermspray boiler, gas provers, two gas heated hotplates for baking pikelets, welsh cakes, etc., numerous gas points used by the students particularly for sugar sweet making, and two Ascot multipoint water heaters with automatic water tempering devices.

In the catering department: Two central unit 4-oven ranges fitted with bain marie and hot closet, a gas boiling table, salamander, gas steamer, and stock pot stove.

Natural Gas in Italy

By F. L. Atkin, M.I.Mech.E., M.Inst.Gas E.

Chief Distributing Engineer, West Midlands Gas Board.

AT A MEETING of the Midland Junior Gas Association on November 3, Mr. F. L. Atkin recounted his impressions on the distribution of natural gas in Italy arising from a visit which he had paid to the headquarters of the Societa Nazionale Metanodotti (S.N.A.M.) in Milano in September last.

The organisation, he explained, is nationalised—the funds being provided by public subscription—and is responsible for distributing natural gas from the gas wells in Northern Italy. Five of these are situated near Cremona at Cornegliano, Caviaga, Ripalta, Bordolano, and Cortemaggiore, together with wells at Corregio, Imola and Ravenna.

The gas has a calorific value of 1,000 B.Th.U. per cu.ft. and issues from the wells at 2,000 lb. per sq.in. Initially it contains moisture (steam) which tends to decrease in volume as the wells are put to use.

A detailed and mathematical study of the economics of distributing gas has been made showing that for the costs applicable to Italy, and taking into account the cost and thickness of the steel, cost of laying, etc., the optimum figure for initial distribution purposes is 800 lb. per sq.in. and the pressure is accordingly dropped to this figure at the gas wells.

A further detailed study has been made of the economics of recompression and it has been proved that the optimum figure for recompressing is by maintaining a pressure ratio between the inlet and outlet of 1.45. The recompressing stations are, of course, powered by natural gas prime movers.

Distribution System

Steel pipes are used for the distribution and are made at a steelworks in Italy which was one of the first undertakings to be provided with natural gas at a specially low rate. The maximum diameter of the pipes is 16 in. and there are smaller diameters as required. The majority of the pipes are laid across country and in grass margins, consequently mechanical excavators are used and the pipes are frequently welded above ground and are 'snaked in.' The methods of welding are in accordance with practice well known in this country, the Middle East, and in America.

The pipes are wrapped at the factory, similar to the practice in this country—*i.e.*, bitumen sheathing, glass fibre, etc.—but he was informed that they were experimenting with polyvinylchloride coverings. He had a discussion concerning the advisability of following American practice of site wrapping, but they had studied this problem and had come to the conclusion that this method was only economical when the pipes had to be transported for long distances, and were therefore subject to damage, and also provided the runs were long enough to justify such methods.

As already mentioned, the pipes are laid across country and in grass verges, and as far as possible towns and villages were avoided, but when it is necessary permission is obtained from the local authority. Conditions vary from one authority to another, usually taking the form of specifying the maximum pressures in relation to the distances from buildings. For example, it may be 25 lb. per sq.in. at 5 ft. from the building, 50 lb. per sq.in. at 12 ft. from the building, and so on. The terrain through which it is necessary to lay pipes varies considerably, and even the flat stretches contain much rock. Furthermore, some of the pipes pass through mountainous districts, with obvious accompanying difficulties.

Cathodic Protection of Pipes

Electrical drainage (cathodic protection) is carried out very widely, mainly due to the problems imposed by D.C. electrical traction. Lengths of pipes are isolated by placing insulating discs between flanges and using washers for the bolts. The lengths which are isolated vary, but insulation is always carried out at valves and governors and underneath railways. Sacrificial anodes are used.

During laying the pipes are tested by filling with air to 100 lb. per sq.in. and the joints are tested with soap and water. Afterwards a hydraulic test is applied equal to 1½ times the working pressure. The pipes are not protected inside, for, when they are sufficiently far enough away from the gas wells, the gas is dry and sulphur free. Odorisation is carried out, but the authorities are not in favour of mercaptans, because the sulphur content creates corrosion problems; thus use is made of proprietary odorants as used in America.

Natural gas is distributed mostly for industrial purposes and S.N.A.M. carry their own sales organisation for this purpose. Gas is also supplied to traditional gasworks for reforming or admixture with orthodox town gas.

The S.N.A.M. organisation has spent a lot of time and thought on the designs of governors, and such governors are jacketed with hot water, heated by gas, to avoid difficulties with the depression of temperatures due to the expansion of the gas.

A further use of the gas, which is handled by associated and other organisations, is for filling bottles at compressing stations. Depots have been established throughout Italy where supplies of gas bottles are kept. Over 30 compressing stations are already in use and a number of others are under construction. In addition, over 600 depots are mentioned where supplies of bottled gas can be obtained.

Attention to Maintenance

The length of mains in use by the S.N.A.M. is 2,180 km. and this will be increased to 5,130 km. in 1954. Most of this has been planned and laid down in the last four years. Maintenance is very important and depots are established throughout the system; these are in touch with each other by micro-wave radio. Some 40 maintenance crews are also in touch with these depots by the same means. There are about 400 maintenance squads employed on the system.

It would be seen that the organisation has made very great strides in four years; studies of the technical aspect of laying have been most remarkable and commendable.

The cost of the gas at the wells is 5 lire per cu.m. which, with an exchange rate of 1,730 lire to the £, is equivalent to 1.96d. per therm. The cost of transmission is between 3 and 4 lire per cu.m., equivalent to between 1.18d. and 1.57d. per therm. It should be borne in mind that the calorific value is 1,000 B.Th.U. per cu.ft. and as the fundamental data used for the calculation of transmission costs are based on volume, the equivalent costs in terms of 450 to 500 B.Th.U. per cu.ft. gas would be almost double this amount. Also, considering that the initial pressure is 'free,' the transmission costs are in fact quite high. The overall cost of the gas at 3d./3½d. per therm is, of course, low, but the initial cost of the gas at the wells is the predominant factor.

The gas produced in the year ended December, 1952, was 1,160,817,503 cu.m. and the effective gas sold was 1,140,323,397 cu.m.—a difference of about 1.42% due to errors of measurement and the loss of gas when purging the new pipes. The gas sold was equal to about 85,000 mill. cu.ft. of British gas. The maximum day was 7,500,000 cu.m., equivalent to about 550 mill. cu.ft. of British gas.

Gas Liquor Spray Tank

A TRAILER TANK for fertilising grassland by spraying it with crude ammonia liquor, together with two road tankers to feed it, has been built in the fitting shop at the Willoughby Lane, Tottenham, works of the Eastern Gas Board. The spray tank carries enough liquor to treat between one and two acres of grassland, according to the amount of ammonia required.

The liquor flows by gravity from the tank, through a regulating valve to the main spray pipes. From these it trickles through short lengths of hose on to the ground. For travelling along the road the spray pipes fold flush with the sides of the tank. When they are swung out for use they span 25 ft. and an acre of ground can be treated in 10 or 15 minutes. Allowing for stops to refill the spray tank, 20 acres or more can be treated in a day. The road tankers are fitted with pumps for loading and unloading, so that the whole outfit forms a completely self-contained unit.

During the past two or three years several gas boards have begun liquor spraying on grassland. The Eastern Board has supplied liquor to a number of farms in the Watford and Cambridge Divisions. Business is growing, so there should be plenty of work for the new spray tank in the next few seasons.

O.E.E.C. Coal Committee.—At its meeting on October 8, the Coal Committee of the Organisation for European Economic Co-operation elected its officers for 1953-54. Dr. Hermann Hauswirth (Switzerland), Deputy Director of the Trade Division, Département Fédéral de l'Economie Publicue, succeeds M. Hermann Dehnen (Luxemburg) as Chairman of the committee. The new Vice-Chairman is Dr. Konrad Ebert (Germany), Director of the Ruhr Mines Association, who succeeds Dr. Hauswirth.

Consultative Council Meetings

WEST MIDLANDS

Transitory Decline in Gas Sales

THE West Midlands Gas Consultative Council was informed at its meeting at Birmingham on October 19, under the chairmanship of Alderman W. H. Malcolm (Coventry), that the Minister of Fuel and Power had appointed Alderman J. H. Lewis to be Deputy Chairman of the Council, Councillor Seymour Brown having finished his term of office. The Chairman said apparently the Minister wanted the office to go round. Alderman Lewis was congratulated and thanks were expressed to Councillor Seymour Brown for his work on the Council.

The question of the disposal of North Staffordshire coal was again raised.

Mr. R. A. Maddock (Stoke-on-Trent) stated that as much as 57% of the coal used by Stoke-on-Trent had to be imported from elsewhere. They were much concerned at having to import coal for their local gas works, particularly because in pre-war days the pottery industry at Stoke used 1 mill. tons of coal and now it was only using 400,000 tons owing to the change over to other methods of firing. That meant there was a saving of something like 600,000 tons and they wanted to know what had happened to it. It was felt strongly that this difference should come to the local gasworks.

Alderman P. Williams (Stoke-on-Trent) said the fact that so much coal had to be imported—it was worse coal than was mined in the area—must have an effect on the price of gas because transport charges had to be paid.

Mr. G. le B. Diamond, Chairman of the Gas Board, said the distribution of coal outside the area by the national authorities was a matter with which they could not deal. At vesting day Birmingham was receiving 51,000 tons of North Staffs coal per year, but the Board transferred the whole of that to Stoke and citizens of Birmingham knew what that had meant. There were various amounts going to other places in the area but if they transferred these supplies to Stoke then these places would have to pay more for gas because coal would have to be imported. Traditionally various towns in the West Midlands had been receiving North Staffs coal for generations and it was now being asked that it should be transferred to Stoke.

Mr. Maddock said they were not blaming the Board, but they would like to know what happened to the 'saving' of 600,000 tons of coal as compared with pre-war.

Mr. Diamond said that was a matter for the Industrial Coal Consumers' Council.

It was stated that this matter was already under review by the authorities and it might be that as the result of discussions something would emerge. In these circumstances it was agreed it would be better to wait before submitting any resolution.

A discussion arose on sales of gas refrigerators which it was stated were prejudiced by purchase tax and hire purchase terms. It was suggested in the discussion that refrigerators were a contribution to public health and helped to reduce food wastage. It was decided to send a resolution to the Minister of Fuel and Power urging him to make representations for the removal of purchase tax.

On the progress report Mr. E. Coupland (Darlaston) asked if it was true the cost of production of gas at the new works at Swan Village was higher than the old cost of production and whether the quality was lower from the point of view of sulphur content.

Mr. Diamond said it did cost more to produce gas at new works and particularly at Swan Village, because capital costs had gone up three times compared with pre-war. They did not build new works unless they were obliged to do so because of the increased demand. To suggest that the gas was not so pure was nonsense. It was under constant examination by Ministry officials.

As to sulphur compounds there was not a statutory obligation to remove these, which came from the coal. He should say there was not more but less.

The progress report presented and adopted stated that a falling off in the high rate of increased consumption of gas since the end of the war was now being experienced and was to be expected for a variety of reasons. These included a slight recession of trade in the earlier part of the year, the general reduction in spending power, and the higher efficiency of modern appliances which were now replacing older models in increasing numbers.

The Board considered that this decline in demand was transitory and that sales would increase. The industry had been handicapped by the ban on promotional advertising, by hire purchase restrictions, and by the high purchase tax on water heaters, fires and other appliances. Following some relaxation in these restrictions, the Board had embarked on a publicity campaign and already there had been increased sales of appliances, particularly cookers and coke fires.

NORTHERN

Extending Freedom of Choice

THE NORTHERN Gas Consultative Council, with the approval of the Northern Gas Board, has set itself the task of extending the principle of freedom of choice in the installation of gas or electricity to as many tenants as possible on the new housing estates which are springing up in North Eastern England. Two of the largest county boroughs in the area, Sunderland and Blyth, have given their approval to the principle and several other local authorities are giving favourable consideration to the idea. This was reported to the Council by Alderman Joseph Hoy, M.B.E., Chairman, at a meeting in Newcastle when he outlined the results of interviews he had had with Consett Urban District Council in North West Durham and Ennerdale Rural District Council in Cumberland.

Alderman Hoy said that in connection with a housing estate at Ebchester in the Consett area, the local council had passed a resolution allotting 50% of the houses solid fuel and the remaining 50% to be divided equally between gas and electricity. The mains to the estate were of adequate capacity and there was ample gas available to provide a good supply. 'Unfortunately the Council's resolution will debar 75% of the tenants from a supply of gas and in the circumstances I sought an interview with the Council. This interview took place at Consett when I was accompanied by Mr. W. O. Kirkwood, Sunderland Divisional General Manager, and the Secretary, and we met the Chairman of the housing committee and council officials.

'Subsequently a letter was received,' continued Alderman Hoy, 'which stated that the Council was unable to change its policy on the Ebchester estate because the contract had been let which provided for a limited number of houses to have gas facilities. The Council did point out, however, that the points raised at the interview on the general question of freedom of choice would be kept in view for future schemes.'

The Consultative Council agreed that this was as far as the matter could be taken at the present time.

Alderman Hoy then referred to the refusal of Ennerdale R.D.C. to receive a deputation to discuss the question of freedom of choice which he had reported to the previous meeting of the Council. He said that following the meeting he had written to the Clerk of the Council asking for the decision to be reconsidered. The Clerk replied that his Council was not prepared to depart from its previous decision that no useful purpose would be served by conferring with the Consultative Council.

He then addressed a personal letter to the Chairman of the Council and asked if he would be willing to grant an interview to discuss the question informally and also clear up any misunderstanding which might have arisen because of adverse Press reports. It was well known, he wrote, that the running costs of all-electric houses, together with maintenance costs, were heavy and the tenants clamoured for gas afterwards. He also emphasised that the Consultative Council was not seeking to have the estates supplied with gas to the exclusion of electricity—the needs of householders for modern amenities demanded a supply of electricity for lighting and power—but before tenants were finally debarred from a gas supply consideration should be given to the points put forward in connection with running costs and maintenance.

As a result an interview took place but a few days later the Chairman of the Council wrote that he had reported on the interview to the R.D.C. and endeavoured to give the members as complete a picture as possible of all the points raised. He regretted to say that in spite of all his efforts and those of the clerk they were unable to persuade the members of the Council to change their attitude regarding the proposal to meet the Consultative Council. He was sorry that the Council's decision was not more favourable but it might be possible to raise the question when further development was to take place.

Alderman Hoy said he felt that all that was possible had been done and the question could only be left open for further negotiation if the opportunity arose. The gas industry unfortunately had a bad record in that area, but since vesting day the Northern Gas Board had endeavoured to give an improved and efficient gas supply which would in time create a demand from the tenants.

During a further discussion on freedom of choice, Alderman Mrs. B. F. C. Adams, Deputy Chairman, stressed the importance of a gas supply being available for the housewife, particularly for washing purposes.

Alderman Hoy referred to the easing in the financial restrictions on hire purchase of hot water equipment and recalled representations in this connection to the Board of Trade three years ago. He outlined the details of an inexpensive sink heater which the Board was putting on the market designed particularly to suit the older type of house which had no piped hot water supply.

Alderman Mrs. Adams said that she felt that this inexpensive sink-heater was the answer to some of the problems which faced local education authorities who had many of the older types of Council schools under their charge. In some cases these older schools had no hot water for the use of children and the cost of installing a piped supply would be prohibitive. Alderman Hoy agreed to put this point before the chairman of the Board.

EAST MIDLANDS

No Shortage of Coke

FROM the North of Scotland to the South of England there is no shortage of coke whatsoever, Mr. Sydney Smith, chairman of the East Midlands Gas Board, told a meeting of the East Midlands Gas Consultative Council at Nottingham on November 3. Mr. Smith denied there was any shortage of coke when he replied to Captain J. F. Richardson (Spilsby), who asked why we were exporting coke to Scandinavia when people could not get coke in this country.

Mr. Smith said he did not know the source of Captain Richardson's information but present stocks of coke were large and there was plenty for those wanting it.

Presenting a summary of the Board's annual report, Mr. Smith was also questioned on the unaccounted-for gas which increased during the year and was said to represent one-tenth of the gas sold. Pointing out that every board throughout the country suffered from unaccounted-for gas to some degree, Mr. Smith said that in the East Midlands area they had a terrific mileage of old mains; consequently leakages were bound to occur. Also they had to contend with more trouble from mining subsidence than in any other area in the country. Loss was slightly over 9% and compared favourably with other areas. Increase in unaccounted-for gas was the subject of a detailed investigation.

Gas in the East Midlands, he said, was the second cheapest for the country. The Board's average charge of 11.87d. per therm compared with one of 15.59d. for the country.

At the last meeting of the Council it had been decided that, as it was more than two years since they first considered representations regarding the poor quality, inadequate pressures, and the price of gas supplied from Wolverton gasworks, the Board should be requested to submit a report to the Council on the results of a technical survey recently made at Wolverton.

A report on the conclusions reached by the Board was put before the Leicester and Northants divisional committee in October. The report stated that the condition of the works and the cost of production were such that a bulk supply of gas to Wolverton from Northampton would result in a lower cost of gas into holder than would be possible were manufacture to continue at Wolverton gasworks.

If the price of gas in Wolverton were reduced to the Board's Zone 6 tariff, the gross operating surplus, before charging any overhead expenses, and after allowing for the savings resulting from a bulk supply from Northampton, would not justify any increase in the price offered by the Board to the Railway Executive for the purchase of the undertaking. The Board's offer was still open for acceptance.

The Council resolved that the matter should be referred to the Minister of Fuel and Power for him to take it up with the Minister of Transport.

SOUTH EASTERN

Price Steady

THE Deputy Chairman of the South Eastern Gas Board, Mr. R. S. Johnson, M.B.E., has stated that if there are no further increases in costs, his Board proposes to hold the price of gas as it is until March, 1954.

At a joint meeting of the South Eastern Consultative Council and its district committees at Westminster on November 3, he said: 'Our present estimates show that the revenue for the current year will be hardly sufficient to make ends meet. Nevertheless, if there are no further increases in costs, the Board proposes to hold the price of gas as it is until March, 1954. I must make it clear, however, that if between now and then our costs increase substantially, the position will have to be reviewed immediately.' Mr. Johnson was summing up after a review of the Board's report and accounts for the year ended March 31.

Questions on the report and accounts were answered by Mr. Johnson, supported by Mr. R. H. Sandford Smith, Secretary of the S.E.G.B., Mr. R. Prince, the Board's Chief Engineer, Mr. V. W. Stanton, Commercial Manager, Mr. C. Stredwick, Chief Accountant, and Mr. A. E. Tullberg, Publicity Officer.

Earlier in the day, the Consultative Council had held a meeting during which 'freedom of choice' was discussed. Councillor A. B. Constable, the Chairman, said a letter had been received from the Minister regarding the Council's previous resolution on freedom of choice on the Wye Estate, Kent, which had recorded the Council's 'continued concern at the attitude adopted by certain local authorities in establishing "all electric" estates to the detriment of those members of the public who have a preference for the use of gas.'

The Minister's letter was read to the Council. It stated that in conjunction with the Minister of Housing and Local Government, the Minister of Fuel and Power had considered the resolution, but was unable to take action on it. The Chairman suggested that the letter should be acknowledged in terms deploring or regretting the attitude of the Minister. A resolution was passed to this effect.

NORTH WESTERN

Gas and Atomic Energy

MR. D. P. WELMAN, Chairman of the North Western Gas Board, told the Gas Consultative Council at its meeting in Manchester on November 5 that atomic energy would have no direct influence on the gas industry. Indirectly, it would be helpful to the industry in that it would make the supply of coal freer. The gas industry believed that efforts to raise efficiency, particularly in the field of carbonising, would keep it closely competitive with electricity.

He had hoped to be able to recommend the Board to make the first reduction in prices last September, but that could only have been done if costs outside the Board's control had remained stable.

Recently the industry had been called on to face a coal price increase. They could not be sure that they would not get a further increase in the price of coal. They had already lost a considerable amount of coal from their allocation because of the shortage, and were down by about 200,000 tons. They could not run an industry at optimum efficiency if they could not obtain the raw materials. The Board was not going to raise its prices to consumers, but neither was it going to reduce them one day if it was necessary to put them up the next.

It was maintaining present prices until it was satisfied that conditions outside the industry were sufficiently stable to enable it to maintain any reduction.

NORTH EASTERN

Refrigerator Policy

THE North Eastern Gas Consultative Council at its meeting in Leeds on November 2 agreed to ask the Board to furnish a report on its policy with regard to the sale of refrigerators.

Alderman H. Sutcliffe (Leeds) asked what were the possibilities of this market being captured for the gas industry. He told members he knew of at least one local authority which was being supplied with electric refrigerators for its new housing estates. Mr. S. Wade (Barnsley) said the Council in question was at Barnsley. It had made the refrigerators available to tenants for 1s. a week, payable with the rent. The experience had been that housewives generally were more favourably inclined towards a refrigerator in their homes than they were to a washing machine. The gas industry, he added, was able to provide refrigerators, but to what extent he was not certain, as supplies were limited. A resolution that the Chief Commercial Officer of the Board be asked for a report on the policy in connection with the sale of refrigerators was passed.

Dr. R. S. Edwards, Chairman of the North Eastern Gas Board, told members that since water heaters had been released from hire-purchase restrictions, sales in the area had risen sharply. An instant pick-up in the first fortnight brought the figure up to pre-restriction sales.

Alderman Sutcliffe, commenting on the need for giving advice to the public on the type of fuel they should burn, said 'The burning of raw coal such as nutty slack in all-night burning fires, has something to do with the weather we have been having in the last few days.'

Woman and Home

THE stand of the North Western Gas Board at the Woman and Home Exhibition, which opened at Manchester on October 20, told the story of gas in the home. The story was told by portraying different types of rooms where gas was seen in action in 'natural' surroundings.

Since the hire-purchase restrictions were lifted recently from water heating appliances, a special display of these was seen, showing how a water heater may be bought over a long term at the cost of less than a cigarette per day.

All principal types of gas appliances were shown, and of particular interest in these days of fuel efficiency, models were shown of the most economical and efficient coke burning appliances in the shape of grates and independent boilers. On the gallery a special demonstration theatre had hourly demonstrations of cookery, fruit bottling, etc., and here also were different types of the latest cookers.

Road Safety First

EXEMPLARY conduct on the roads was given official recognition at Cambridge last month when the Chief Constable of the City, Mr. B. N. Bebbington, presented safe driving awards to 19 drivers of the Eastern Gas Board's transport centred at Cambridge. The General Manager, Mr. Hunter-Rioch, presided, and was supported by Mr. E. H. Winch (Divisional Engineer), Mr. G. H. Stanley (Divisional Secretary), and Mr. G. Young (Transport Supervisor). In his introductory remarks, Mr. Hunter-Rioch congratulated the men on behalf of the Board for their excellent performance on the highways and the contribution they had made in the cause of road safety. The presentations represented a total of more than 80 consecutive years of accident-free driving.

Before making the awards, the Chief Constable added his own testimony to the great importance of considerate conduct on the road, and said: 'By your safe driving you are setting a fine example to others, and if we can build up in this country a body of people who are driving well, it will make a great deal of difference to the accident rate.'

Further Awards

Further examples of accident-free driving in the Cambridge Division were recognised on October 20, when drivers of the Bedford District received their awards in the annual Safe Driving Competition organised by the Royal Society for the Prevention of Accidents. The presentations took place during the local Road Safety Week at a special film show at the Bedford Town Hall.

The value of these awards as a contribution to better roadmanship was emphasised by Superintendent E. S. Turton, Bedfordshire Road Safety Organiser, who said that many years of driving without accident were involved. This was quite an achievement when it was realised that every day in Bedfordshire an average of nine accidents were reported. The following received awards—Fifteen year brooch: J. Clark. Fourth bar to five year medal: F. Fuller and E. A. Gilbert. Diplomas: F. G. Manton, J. C. Grove, G. J. Walker, L. P. Hunt, B. Leach.

MODERN KITCHENS IN DEPARTMENT STORE

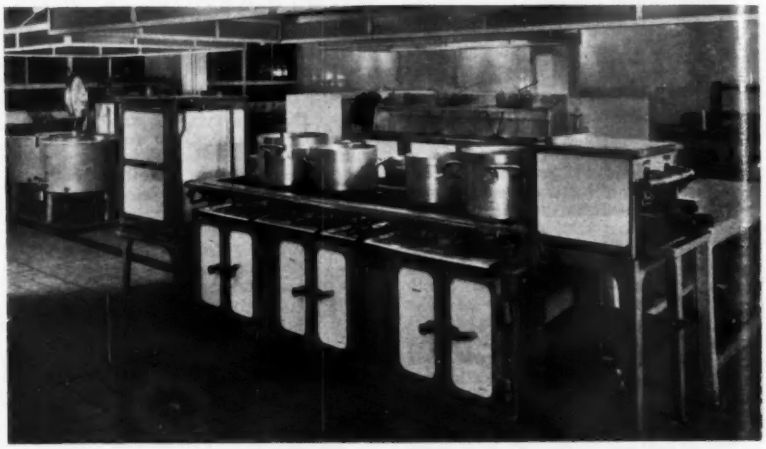
A SPECIAL attraction of a new department store built by Hammonds, Ltd., at Hull, is a restaurant and self service bar, which can be reached either by escalator, passenger lift, or from the main staircase. Early shoppers can have their morning coffee from 9 a.m. onwards, and the luncheon menus range from a popular luncheon at 3s. 6d. to a special luncheon at 5s. 6d., with an appetising choice of dishes in each price category.

A wide selection, too, is available in the tea menu, which is served from 2.30 p.m. daily, and a substantial meal can be ordered if required. An indication of the care taken by the management to cover all requirements of its customers is the children's tea.

The kitchens in which the catering is carried out not only for the restaurant, seating 264 people, the self service bar seating 60, but also for the staff canteens, are spacious and labour saving. New World large scale gas cooking equipment was installed by Radiation Group Sales, Ltd., Large Apparatus Division, on instructions from the architects, T. P. Bennett & Son, and in close collaboration with the general contractors, Sir Robert McAlpine & Sons, Ltd., ensuring the preparation of well-cooked meals and a really quick and efficient service. The Hull Group of the North Eastern Gas Board took part in initial discussions regarding this installation and assisted in installation and fixing of equipment.

The meals are prepared by a staff of 20 cooks and assistants, and the restaurant serves on an average 500 lunches daily, 100 high teas and approximately 1,000 beverages. In addition, the self service serves approximately 200 lunches and 800 beverages daily; the canteen approximately 100 lunches, 200 snacks, and in the region of 400 beverages.

Apart from the normal daily business, evening functions are held in the restaurant, which has a ballroom floor sprung for dancing. The Hammonds banqueting service caters for dinners of from three to seven courses for up to 300 people.



The Hammonds kitchens have been fully equipped with Radiation Large Scale Cooking Equipment. Appliances included are a No. 757 Chester treble oven range; 'Holborn bain marie; No. 1324 stockpot stand; No. 3324 roasting oven: No. 24/3 Kingfisher fryer; No. 18 'B' pattern Savoy griller; double compartment No. 4158 Keswick steamer; two 2051 and one 18/2051 Lune boilers; 26 ft. 6 in. hot and cold counter, with 30 ft. hot and cold service counter in the staff servery. The photograph shows two Lune boilers, 3324 roasting oven, Chester range and No. 18 'B' pattern Savoy griller.

The Domestic Coke Allowance for the winter period from November 1 to April 30 has been increased from 30 cwt. to two tons. The increase is authorised by the Coal Distribution (Restriction) (Amendment) Direction (S.I. 1585 of 1953), issued by the Minister of Fuel and Power under article 6 of the Coal Distribution Order, 1943, as amended by a series of Orders made in 1950 and 1951.

Building Plant Exhibition.—The 1954 Building Plant Exhibition, organised by the Ministry of Works, will be held at Reading from June 24 to June 30. The site for the exhibition is Hills Meadow, immediately below Reading Bridge, bordered on one side by the River Thames, on the other by the Reading-Caversham Road. The total space available for exhibits, demonstrations and car park is approximately 300,000 sq. ft.

The Consumers' Committees of the Stockton and Middlesbrough units of the Northern Gas Board have been merged. A consumers' committee of 18 members, representing all Teesside, is being set up instead.

World Power Conference.—Among the papers to be presented by the British National Committee at the Brazilian sectional meeting of the W.P.C. to be held at Rio de Janeiro from July 25 to August 8, 1954, will be one by Mr. John F. West, Joint Managing Director, West's Gas Improvement Co., Ltd., on 'Carbonisation and Gasification in Tropical and Sub-Tropical Regions.' Another British paper will be by Dr. A. Parker, C.B.E., Director of Fuel Research, and Mr. T. F. Hurley, O.B.E., Chief Research Engineer, Fuel Research Station, on 'Combustion of Vegetable Wastes in relation to Power Production.'

Institution of Gas Engineers

Autumn Research Meeting

The following programme has been arranged for the 19th Autumn Research Meeting of the Institution of Gas Engineers, to be held under the Presidency of Mr. J. T. Haynes, M.I.C.E., at Church House, Westminster, S.W.1, on November 24 and 25.

Tuesday, November 24

9.30 a.m.—Opening. Presentation and discussion of the 14th Report of the Chairmen's Technical Committee. (*Comm. No.* 434.)

10.15 a.m.—Presentation and discussion of the 30th Report of the Gas Education Committee. (*Comm. No.* 345.)

11 a.m.—Presentation of Diplomas.

11.15 a.m. to 12.15 p.m.—Presentation and discussion of paper on 'Some Aspects of Coal Pyrolysis,' by Sir Charles Ellis, KT., F.R.S., Scientific Member, National Coal Board. (*Comm. No.* 436.)

3 p.m.—Presentation and discussion of Report of the Institution Gas Research Fellow. (*Comm. No.* 437.)

4 to 5 p.m.—Presentation and discussion of paper on 'Composition of Coal Tars,' by Dr. McNeil, B.SC., PH.D., F.R.I.C. (Director of Research), and G. A. Vaughan, A.R.I.C. (Chief Analyst), Coal Tar Research Association. (*Comm. No.* 438.)

Wednesday, November 25

9.30 a.m.—Presentation and discussion of a Joint Report on 'Research at the London and Birmingham Research Stations of the Gas Council,' by R. H. Griffith, B.A., D.PHIL., M.INST.GAS E., Director of Research, London Research Station; and F. J. Dent, D.SC., PH.D., M.INST.GAS E., Director of Research, Birmingham Research Station. (*Gas Council Research Comm. GC*8.)

10.30 a.m.—Presentation and discussion of paper on 'Corrosion and Preservation of Gasworks Plant,' by L. A. Ravald, M.SC.(TECH.), A.R.I.C., London Research Station, Gas Council. (*Gas Council Research Comm. GC*9.)

11.30 a.m. to 12.30 p.m.—Presentation and discussion of the 44th Report of the Joint Refractories Committee: 1952-53. (*Gas Council Research Comm. GC*10.)

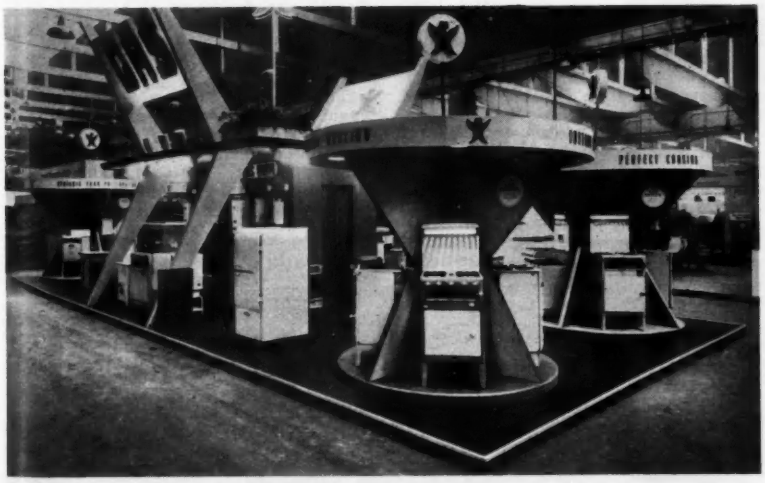
2.30 p.m.—Presentation of paper on 'The Wind Load on a Spirally Guided Gasholder,' by W. A. Simmonds, B.SC., F.INST.P., Birmingham Research Station, Gas Council. (*Gas Council Research Comm. GC*11.)

3.15 p.m.—Presentation and discussion of paper on 'Heat Transfer and the Cooking Process,' by E. W. B. Dunning, B.SC., M.INST.GAS E., A.R.I.C., London Research Station, Gas Council. (*Gas Council Research Comm. GS*12.)

4 p.m.—Presentation and discussion of paper on 'Experiments with Common Balanced Flues,' by C. H. Purkis, B.A., B.SC., M.INST.GAS E., and W. J. Bennett, B.SC., London Research Station, Gas Council. (*Gas Council Research Comm. GC*13).

4.45 p.m. to 5 p.m.—Concluding business of meeting.

Glasgow Exhibition



The Scottish Gas Board Stand

This year, for the first time since the beginning of the war, the gas industry had real competition at the Modern Homes Exhibition at Glasgow. Electricity interests launched a hard selling campaign aimed at the cooker market with a good show of some 40 cookers in price ranges from £18 to £110. The gas industry concentrated similarly on cookers and other domestic appliances as in former years, with an excellent stand arranged by the Scottish Gas Board, Glasgow District.

Results were extremely encouraging from the gas viewpoint. Despite the intensified competition, gas more than held its own. Demand for cookers, water heaters and space heating was reported as being 'excellent.' Sales were as good as, and possibly better than in previous years, suggesting that consumer preference stays with gas.

The Gas Board stand featured Mr. Therm as the symbol of service, and had four island sections, one at each corner, each displaying cookers, as well as a larger central section, showing fires, water heaters, and other appliances. Gas refrigeration was also featured. Demand was listed as being mainly for cookers, with Cannon, Radiation, Parkinson, Main, Flavel, De La Rue and Newholme models all in the running.

Warming Enfield Churches

It is reported in the latest issue of *T.D. News* (the magazine of the Tottenham Division, Eastern Gas Board) that fitters in the Enfield district recently completed another installation of panel heaters in a local church, making 16 Enfield churches having overhead gas heaters.

Since the war Enfield has installed well over 400 heaters in schools, public houses, and stores.

Another job in hand at Enfield is a T.A. Centre at Carterhatch Lane, which is to be provided with living quarters, offices, and training hall. The first section, consisting of accommodation for six families, will have gas water heaters, gas fired fuel grates, cookers, and wash boilers.

Scottish (Western) Juniors

A meeting of the Scottish Junior Gas Association (Western District) was held on October 9 at Glasgow, Mr. Alex. Walker, President, occupying the chair. Mr. Walker, in presenting Mr. R. A. Currie, the immediate Past President, with a medallion as a token of his year of office, said that Mr. Currie had maintained a high standard and he did not spare himself as President.

Mr. Currie, in reply, thanked the members for making his term of office an interesting and enjoyable one.

In introducing Mr. A. F. Cottrell, of Woodall-Duckham Construction Co., Ltd., Mr. Walker referred to the last occasion when Mr. Cottrell addressed the Association, when a joint meeting with the Eastern District was held at Edinburgh.

Mr. Cottrell's paper on 'Starting Up New Vertical Retort Plants' was published in the *Journal* of October 28.

A free and informal discussion took place, those taking part in the discussion being Messrs. C. Campbell, G. Royden, S. Patterson, J. Greig and D. Elgin.

Mr. W. Cummings proposed the vote of thanks to which there was ready applause.

Gas Pensions

The Minister of Fuel and Power has made the Gas (Pension) (Amendment) Regulations, 1953, which came into force on November 1. These regulations amend the Gas (Pension Scheme) Regulations, 1949, which relate to the establishment by area boards and the Gas Council of pension schemes approved by the Minister of Fuel and Power, so as to enable the boards and the Council with the approval of the Minister to participate in and contribute to pension schemes, other than those established or maintained by the Boards or Council.

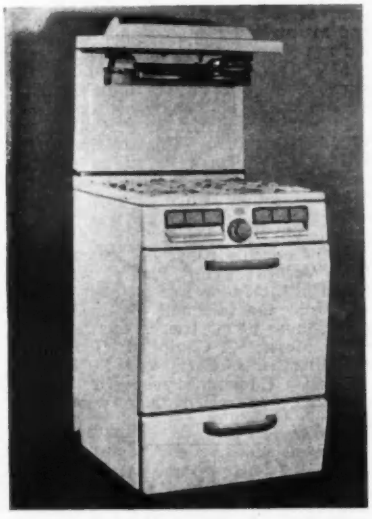
They also amend the Gas (Pension Rights) Regulations, 1950, under which pension schemes confined to employees of former gas undertakers (*i.e.*, transferred schemes) are continued by the area board or the Gas Council in whom the gas undertaking vested and provision is made to allow members of a transferred scheme to transfer to a pension scheme established by that board or the Council. These regulations enable a member of a transferred scheme who has left employment with a board for employment with another board, or the Council, or who has left employment with the Council for employment with a board, in each case to transfer to the pension scheme established by the board or Council employing him.

Trade News

'Renown Five' Cooker

The Parkinson 'Renown Five' cooker, which incorporates many advanced features of engineering and design is now available. Almost identical to the 'Coronation Renown' which was shown privately at the Ideal Home Exhibition in 1952, this is the first British cooker to incorporate twin eye-level grill. Other advantages include automatic flash ignition to all burners, *including the grill* —a feature not found on any other gas cooker.

The grill is fitted with two poker-type burners which can be individually lit—and which give a total toasting area of 94½ sq. in.—large enough to make six pieces of toast simultaneously. The grill tray can be slid forward for three-quarters of its length for easy turning of food. The grill pan itself is so attractively finished, it can be used for serving food direct to the table. The grill canopy has slots for plate warming—another exclusive feature.



The exceptionally roomy oven is big enough to take the largest turkey it is possible to buy. Oven heat is automatically controlled by an 'Ajusto' thermostat giving 12 positions, with ¼, ½, and ¼ graduations, and can be pre-set to any desired temperature. The warming drawer, set below the oven, moves smoothly and silently on nylon rollers and is constructed with grooves for plates. It can also be used as storage space for grill trays, meat tins, and other kitchen utensils.—*The Parkinson Stove Co., Ltd., Stechford, Birmingham.*

Temp. Indicator Controller

The Accurate Recording Instrument Company, of Morden, Surrey, in conjunction with Watson House, has developed and is now producing a new temperature indicator-controller which has many applications in a wide industrial field. It will accurately indicate the temperature at any desired point, and control the flow of either gas or liquid fuel exactly in proportion to that temperature.

The instrument has a number of interesting features, and is covered by patents taken out by both the North Thames Gas Board and the Company.

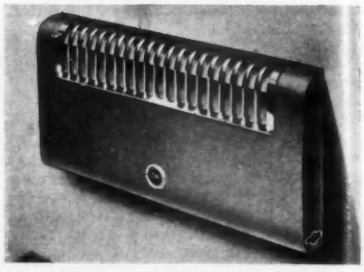
Some of the chief points about it are as follows: (i) No electricity is employed. (ii) It gives proportional control of the fuel supply. (iii) The powerful liquid expansion system employed is quick acting, positive, and sensitive to the slightest temperature changes. (iv) The valves can be readily and positively set to operate at any point on the scale, which may at present range up to 500°F. A model operating up to 1,000°F. will be available shortly. (v) Ambient temperature changes around the instrument head are automatically cancelled out by the 'Accurate' bi-metallic compensating device. (vi) The indicating pointer and the control valve are both operated by the same unit, so that they cannot in any circumstances get out of relationship—as so often happens when the indicator and the thermostat are separate units. (vii) The instrument is of clean design and fine workmanship.—*The Accurate Recording Instrument Company, Aric Works, Garth Road, Morden, Surrey.*

'Staffa' Products

The Mechanical Engineering Division of Chamberlain Industries, Ltd., Staffa Works, Staffa Road, Leyton, London, E.10, who manufacture the 'Staffa' range of bending machines, grinders, dust extractors, and lifting equipment, have appointed as their stockists and distributors for Yorkshire, Lavite, Ltd., of Cawley's Mill, Cleckheaton, a subsidiary of John Rigby & Sons, Low Moor, who specialise in chain annealing, repairing, and testing. Lavite, Ltd., will handle all enquiries for 'Staffa' products in their area and arrange for demonstrations if required.

The 'Royal' Convector Heater

The 'Royal,' illustrated here, is designed for wall fixing by two screws. It is a flueless heater consuming 7 cu.ft. per hour at 2½ in. W.G. on town gas and 0.94 cu.ft. per hour at 12 in. W.G. on liquid petroleum gases. The dimensions are 24 in. × 12 in. × 3 in.



It is designed for background heating in large rooms and for providing heating in bedrooms, bathrooms, halls, garages, caravans, small boats, etc. The standard finish is in gold bronze heat-resisting enamel with chromium plated grille and fittings.

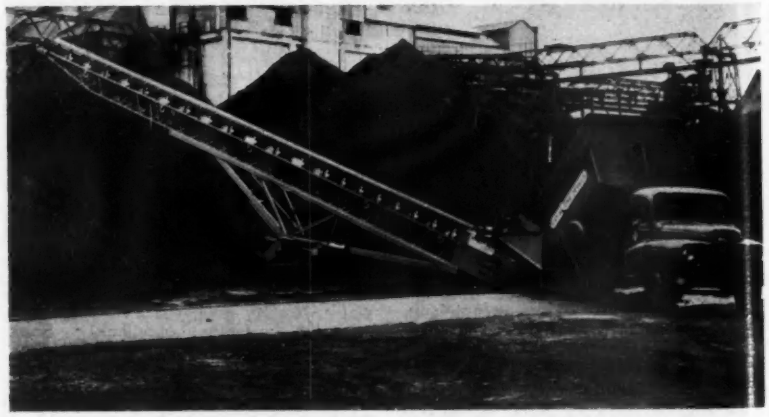
Two Bray jets are used, one being a heating jet and the other a small luminous jet to illuminate the red glass panel showing the word 'ON.'

A major feature of the 'Royal' is that it gives the advantages of background central heating at low initial, installation, and running costs.—*Lloyd Metcalfe Designs, Ltd., Gordon Street, Leamington Spa.*

Stockpiling and Loading

The combination of the 'Loband' loader and improved 'Hylo-veyor,' manufactured by C. H. Johnson (Machinery), Ltd., is now proved a complete success for the stockpiling of loose bulk materials brought to site in end-tipping and telescopic lorries.

The 'Loband' loader can feed at any angle up to right angles around the 'Hylo-veyor' hopper. This is a useful point in eliminating awkward approaches for the lorries. Rates of 260 tons per hour in coal and 100 tons per hour (400 cu. yds.) in coke are being obtained.



The equipment eliminates the necessity for tipping on the ground and then piling with shovel or grab and the laborious method of backing lorries up the pile. Both machines are highly mobile and can quickly be towed from one site to another. Tractors are not required to manœuvre the machines as the pile grows, as they can be easily manhandled.

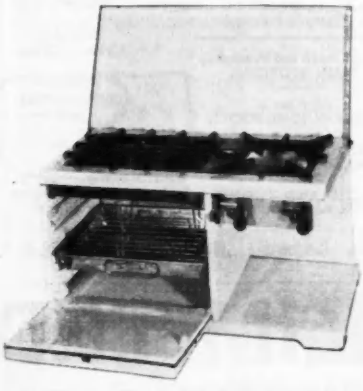
Our illustration shows a 62 ft. 'Hylo veyor' and 'Loband' loader combination, stockpiling coke to a height of 27 ft direct from lorry at the Birkenhead works of the North Western Gas Board. These machines can be supplied to stock to 30 ft. height.—*C. H. Johnson (Machinery), Ltd., Adswood, Stockport.*

De-Rusting

Metal Processes Ltd. are to supply their 'De-Ruster' material to a large cable company in Surrey for the removal of rust from an overhead gantry 260 ft. long, 30 ft. wide and 30 ft. high. After a successful test it was decided that 'De-Ruster' applied with a wire brush would eliminate a great deal of manpower and cost. Similarly, a firm of steel founders and engineers in Hertfordshire are to immerse their crane jibs in the solution regardless of the size of tank required, providing certain preliminary tests are satisfactorily carried out. So far the firm has allowed for eight hours' manpower per jib for scraping off rust before painting.—*Metal Processes Ltd., 758-786, Kingsbury Road, Erdington, Birmingham 24.*

Vulcan 10B Griller

Of particular interest to those living in one-room flatlets, caravans or yachts, is the 10B griller recently produced by the Vulcan Stove Co., Ltd. This is a neat and readily portable table unit attractively finished in cream vitreous enamel with black vitreous enamel burners and hot plate.

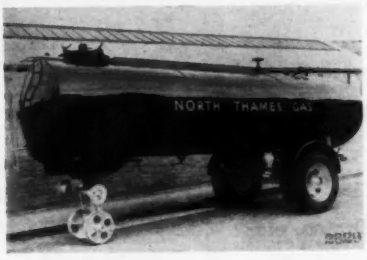


It has a boiling burner, a reversible grill burner to be used as a second boiling burner if required, and a tinned grill pan. The closing cover top forms a protective splashplate when the appliance is open.

The dimensions (with open cover top) are: Height 19¼ in., width 19¼ in., depth 14 in. The weight is 38 lb.—*The Vulcan Stove Co., Ltd., Exeter.*

Semi-Trailer Tankers

Our photograph is of a semi-trailer tanker supplied to the North Thames Gas Board. Trailers of the type are self-contained units with a petrol driven pump in the rear compartment, and as



such are capable of loading and unloading themselves, and of ferrying loads to tar spray vehicles. They are designed for operation with petrol and diesel-engined Dennis 'Horla' tractor chassis. Their capacity is 1,250 gals.

The types of liquid which they will carry are the tar and gas oil liquids employed in gas works practice.—*Eagle Engineering Co., Ltd., Eagle Works, Warwick.*

'Rayburn' Domestic Boiler

In 1946 Allied Ironfounders, Ltd., introduced the 'Rayburn' cooker—the first insulated cooker and water heater of its kind. Now, in 1953, they have produced a thermostatically controlled domestic boiler designed to fit into the modern streamlined kitchen and solve the problem of hot water supply and central heating with a small boiler. The 'Rayburn' is completely automatic, the thermostat having a rapid and accurate action, and it will burn up to 12 hours without attention on various kinds of solid fuel. The 'Rayburn' will heat cylinders of 30 to 60 gal. capacity for domestic hot water supply, but when used in conjunction with a 30 gal. indirect cylinder the boiler heats a maximum of 75 sq.ft. of radiation surface, including unlagged piping, in addition to supplying the domestic hot water. The finish of the boiler is modern with cream stove enamel casing and black vitreous enamelled top plate.—*Allied Ironfounders, Ltd., 28, Brook Street, London, W.1.*

Saunders 'M' Cock

This quick-acting regulating and stop cock is an industrial development of the Saunders spherical plug cock of precision finish so widely used in the control of fuels, oils, and other fluids aboard aircraft. The operating plug rotates through 90° between two flexible rubber seats which tighten their seal as the pipeline fluid pressure increases. A flexible diaphragm unites the fixed body and moving spindle and thus prevents any leakage to atmosphere at this usually vulnerable point. A cock of this type with full and straight-through bore equivalent to pipeline diameter has many and varied uses in the gas industry.

In addition to the efficient handling of air, water, clean liquor, etc., it is admirably adapted for blast furnace gas, coal gas, coke oven gas, water gas, and producer gas and to several by-products and their manufacturing processes.

It is expected that there will be many applications other than those mentioned for which 'M' cocks will be applicable. In other fields its suitability for handling viscous fluids such as gum arabic and colloids has already been established, while the good results given on vacuum will add further to its usefulness. All working parts are carried by the body

and the detachable end connections permit removal of the body for inspection or maintenance without disturbing the pipework. The detachable ends can be of screwed, flanged, or bib-end type, adapting the cocks to many plant layouts. The standard specification includes malleable cast iron body, mild steel spindle, silicon aluminium bonnet and handle, and 'C' Grade seats and diaphragm.—*Saunders Valve Co., Ltd., Cwmbran, Monmouthshire.*

Shot-Blast Equipment

Vacu-Blast Ltd., the manufacturers of the Vacu-Blast portable shot blast equipment announce the formation of a subsidiary company which offers a country wide shot blasting service on a contract basis. This service is for firms who have paint maintenance, corrosion, and general shot blast cleaning problems. The title and address of the new company is:—*Vacu-Blast Contractors Ltd., 291, Aberdeen Avenue, Slough, Bucks.*

From George Pike, Ltd., Equipment Works, Alma Street, Birmingham, 6, we have received a leaflet dealing with the firm's 'Roadall' concrete breaker, which is also extremely effective for tarmac and clay cutting, asphalte and pitch breaking, drilling, log splitting, and ramming.

A New Bulk Loader

The 'Matbro' bulk loader, designed and built by Mathew Bros., has several important features which will commend it to those seeking a hydraulic power shovel that combines robust construction with the compactness and manœuvrability that are essential for indoor work. So compact, sturdy, stable and highly manageable is this machine that it can be operated either over rough ground or within the restricted confines of a factory's aisles.

With its 13 ft. turning radius the 'Matbro' bulk loader can operate in intersecting aisles of only 8½ ft. width its ample power, derived from a new Fordson Major O.H.V. engine, is transmitted through a front-wheel drive—a feature that vests the machine with immense stability and excellent traction. Rear-wheel steering gives all the desired manœuvrability. Notable also is the hydraulic 'crowding action' which enables the scoop to be tilted and tipped at a controlled rate, and in any position, so that the machine may travel with the scoop in a raised or lowered position.

Shovels of ¾, 1, or 1¼ cu. yd. capacity can be fitted, but the machine's usefulness is not confined to loading loose materials. It can be equipped with a dozer blade, fork lift attachment, crane jib, and other accessories. — *Mathew Bros., Wallington, Surrey.*

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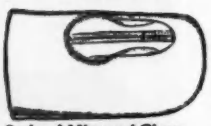

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Henley-in-Arden,
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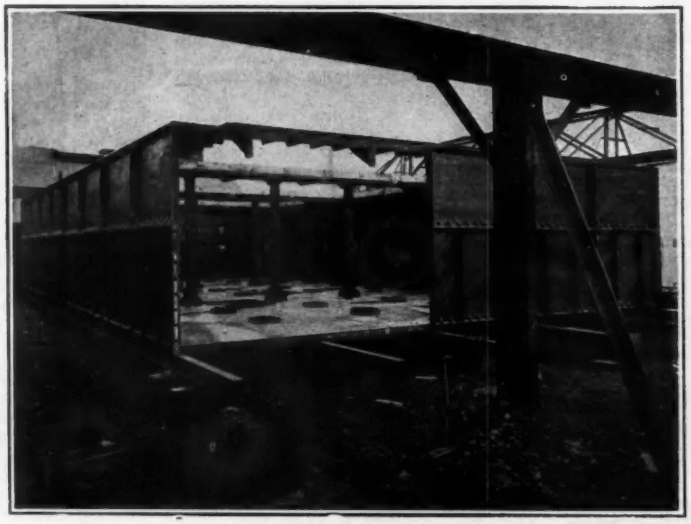

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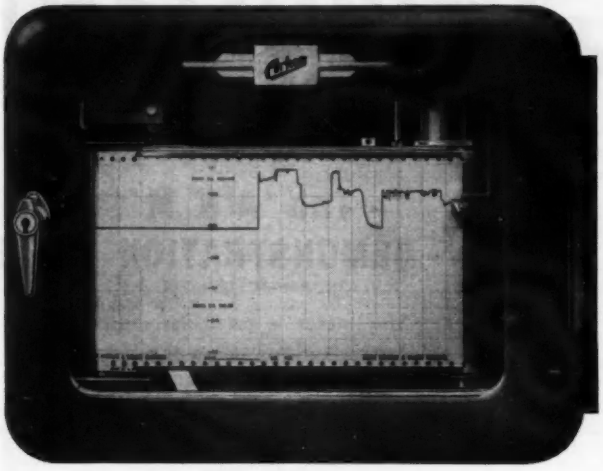

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Draught, Pressure

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Flow Measurement

CHOOSE THE

Arkon

Model 1600

and

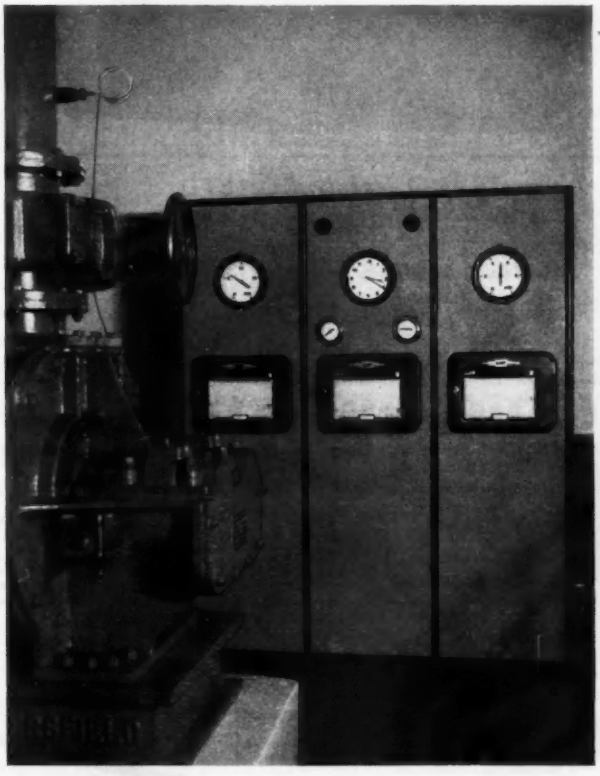
Model 1601

The ARKON Model 1600 is a new instrument for measuring and recording pressure or draught or a combination of both. It offers a high degree of accuracy, great sensitivity and a high magnification of very low readings.

The ARKON Model 1601, sister instrument to the ARKON Model 1600, is designed for the measurement of gas or air flow. The differential pressure created by an orifice plate inserted in the main actuates the instrument, which registers in terms of flow rate. Like the Model 1600 it is highly responsive and will give full scale deflection on very low differentials.

The wide rectangular chart of the ARKON Models 1600 and 1601 is easily read by unskilled operators. The chart mechanism has many new features which permit a close and continuous record to be maintained with a minimum of attention.

A simple design combined with a robust construction makes these instruments particularly suitable for work under difficult conditions as in gas works, coke oven plants, steel works, foundries, etc.



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CHELTENHAM, GLOUCESTERSHIRE *Telephone: Cheltenham 5172*

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Illustrated is the 1200 c. ft. Dry Demonstration Meter in tinplate case.

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The 'A & M' DRY DEMONSTRATION METER

This meter is particularly useful for cookery or other demonstration purposes. The dial is 9" in diameter, and the meter is available in a variety of sizes. Complete details will be sent on request.

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PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price **1/3d.**; by post **1/5d.**

Subscription Rates: Home and Empire:—**52/-** per annum; Foreign:—**60/-** per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at **1/9** per line (approx. **7** words)—minimum charge **10/6.** A Box Number address occupies **2** lines, and a further **6d.** is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received **14** days prior to publication if proofs are required. Type area of inside pages **10"** deep × **7"** wide; block screen **120.**

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. *'Phone:* Harrogate 84291.

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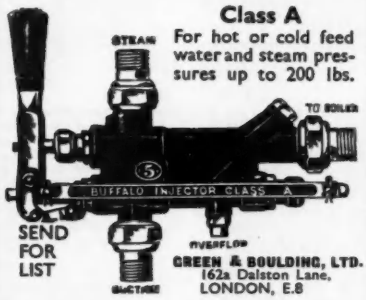

SEND FOR LIST

GREEN & BOULDING, LTD.
162a Dalston Lane,
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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

EAST MIDLANDS GAS BOARD

LEICESTER AND NORTHANTS DIVISION
RELIEF SHIFT SUPERINTENDENT—
LEICESTER UNDERTAKING

APPLICATIONS are invited for the position of RELIEF SHIFT SUPERINTENDENT at the Aylestone Road Works. Grade A.P.T. 6, salary range, £490-£570 per annum.

Candidates should preferably have obtained the Higher Grade Certificate of the Institution of Gas Engineers, or its equivalent, and should be capable of controlling the day-to-day operation of the Works, which has a capacity of 12 million cu. ft. of coal gas and 7 million cu. ft. C.W. Gas per day. Candidates should be conversant with the control of Glover-West C.V. Retorts and fully automatic Humphreys & Glasgow C.W.G. Plant, and the usual ancillaries.

The successful candidate may be required to pass a medical examination, and unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, stating age, qualifications, present position and experience, together with the names of two referees, should be addressed to the undersigned to be received not later than Wednesday, November 18, 1953.

H. B. TAYLOR,
Divisional General Manager.

Millstone Lane,
Leicester.
October 28, 1953.

VACANCY for CHEMIST to take charge of development and testing of gas cooking and heating equipment for our Group of Companies in Falkirk. Men with experience and young men with University Degree should apply. Information as to experience, academic qualification, age and salary should be given. To: Allied Ironfounders, Ltd., Falkirk.

WALES GAS BOARD

TECHNICAL ASSISTANT/
RELIEF SHIFT SUPERINTENDENT—
PONTYPOOL UNDERTAKING

APPLICATIONS are invited from suitable young men between the ages of 20/25 to be trained for the above appointment.

Applicants should have had previous experience in the laboratory of a Gas Works, or be conversant with the control of Gas Works plant, or have a sound knowledge of chemical and/or mechanical engineering. They should have received a good general education to enable them to complete the Institution of Gas Engineers' examinations. Educational facilities are available and allowances for part time courses will be granted.

The starting salary will be according to age, qualifications and experience.

The successful candidate will be required to pass a medical examination and if eligible to subscribe to the Board's Staff Pension Scheme.

Applications, stating age, education and experience with the names of two referees, should be forwarded to A. Facer, Esq., General Manager, Wales Gas Board (Pontypool Undertaking), Gas Offices, Hanbury Road, Pontypool, not later than fourteen days after the appearance of this advertisement.

WALES GAS BOARD

SENIOR ACCOUNTANCY ASSISTANT,
SWANSEA UNDERTAKING

APPLICATIONS are invited from qualified persons or persons with experience of public utility accountancy work for the above appointment. Experience of accountancy within the Gas Industry, and of machine accounting, will be an advantage.

The person appointed will be an Assistant to the Accountant of the Swansea Undertaking/Group Accountant, Swansea Group, and should be fully experienced in the preparation of final accounts and balance sheets.

The salary will be within Grade 9 (£615-£715) of the National Agreement for Gas Staffs.

The successful candidate will be required to pass a medical examination and subject to any protected superannuation rights will be required to subscribe to the Board's Staff Pension scheme

Applications, furnishing personal details and particulars of experience and qualifications, with the names of two referees, should be sent to the undersigned to arrive not later than November 21, 1953.

ERNEST ABLETT,
Engineer, Manager and Secretary,
Wales Gas Board,
Swansea Undertaking.

Gas Offices,
Oystermouth Road,
Swansea.
Nov. 2, 1953.

(*Classified Advertisements continued on page* 410)

APPOINTMENTS VACANT (ctd.)

A COMPANY of the Parkinson & Cowan Group is desirous of appointing a REPRESENTATIVE, age 30/45, covering the Gas Boards in the Home Counties. Preference will be given to applicants with established connections. Knowledge of domestic gas burning appliances will also be an advantage. The position is permanent and pensionable. Applications, in strict confidence, to Personnel Manager, Iron Lane, Stechford, Birmingham, 9.

NORTH WESTERN GAS BOARD

BLACKBURN GROUP

MAINTENANCE FITTER—DISTRIBUTION

THE successful applicant for the above position will be responsible for maintenance of distributing plant, including boosters, governors, recording instruments and valves.

Sound practical training in engineering or gas fitting essential. Experience in gas distribution and ability to drive a light van desirable. Schedule of duties and conditions will be forwarded on application.

Rate of pay 3s. 7d. per hour, 44 hour week. Sick pay scheme. National Joint Industrial Council conditions.

Apply, giving names of two referees, to General Manager, North Western Gas Board (Blackburn Group), Cardwell Place, Blackburn, within 14 days.

SCOTTISH GAS BOARD

ALLOA/STIRLING SUB-GROUP

ALLOA DISTRICT

WORKS TECHNICAL ASSISTANT

APPLICATIONS are invited from qualified persons for the above appointment at Alloa Gas Works. Candidates should be experienced in the operation of continuous vertical retorts, CWG plant and modern ancillary plant.

The salary will be within Grades A.P.T. IV-VI (max. £570 per annum). The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications stating age, education, training, qualifications and experience should be sent to the undersigned within fourteen days of the publication of this advertisement.

W. M. GLEDHILL,
Sub-Group Manager.

Bank Street,
Alloa.

EASTERN GAS BOARD

NORWICH DIVISION

TECHNICAL ASSISTANT—NORWICH WORKS

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT at the Norwich Works, at a commencing salary within the range of Grades A.P.T. 6 and 7 of the National Salary Scales for Gas Staffs.

Candidates should possess suitable qualifications, and experience with Glover West Continuous Vertical Retorts would be an advantage.

The successful applicant will be required to pass a medical examination and join the Board's Superannuation Scheme.

Applications, stating age, qualifications and experience, together with the names of two referees, should reach the undersigned within 14 days of the appearance of this advertisement.

J. V. KNIGHT,
Manager, Norwich Group.

Eastern Gas Board,
Bishop Bridge,
Norwich.

EASTERN GAS BOARD

NORWICH DIVISION

KING'S LYNN DISTRICT

GAS FITTERS Grades I and II required for duty with the King's Lynn District. Pay and conditions in accordance with the National Joint Industrial Council, Provincial 'A' rates.

Applications with names of two referees to be sent to L.C.B. Williams, Group Manager, Gas Works, Wisbech Road, King's Lynn.

November 4, 1953.

EASTERN GAS BOARD

NORWICH DIVISION

LOCAL MANAGER—

NORTH WALSHAM

APPLICATIONS are invited for the position of LOCAL MANAGER of the North Walsham Undertaking, which has an annual output of 27 million cubic feet.

Applicants should have a good working knowledge of small works and the control and operation of stop-ended hand charged horizontal retorts.

Knowledge of district work and experience in supervising the work of Gas Fitters and Servicelayers would be an advantage.

The commencing salary would be within the range A.P.T. IV and V, Provincial 'B' (£290-£525) and a house will be available on a service tenancy.

Applications, giving details of age, qualifications, experience, and present employment should be submitted in writing to the undersigned not later than fourteen days after the appearance of this advertisement.

J. V. KNIGHT,
Manager, Norwich Group,

Eastern Gas Board,
Bishop Bridge,
Norwich.

FOR SALE

FOR SALE :—One Unused All-Steel Shell and Tube HEAT EXCHANGER designed for cooling hot oil. Shell 24 in. dia. × 1½ in. thick × 9 ft. long between tube plates contains 163 × 1 in. i/d × 5/32 in. thick steel tubes. Domed multipass end covers are 1.5/8 in. thick. Cooler is horizontally mounted on steel cradles and weighs 37 cwt. Duty is 648,000 BTU's per hour with cooling water at 95°F. Available at very low price ex store in Swansea.—W. H. Collingbourne & Co., Ltd., 1481, Stratford Road, Birmingham, 28. *Phone*: Shirley 3303.

FOR SALE :—The following unused Ruston & Hornsby tank cooled vertical diesel engines, each with crankshaft extension left bare and supported in ring oil bearing, rotation anti-clockwise from flywheel end, each with air starting arrangements, Burgess exhaust silencer and spark arrestor and usual accessories.

One type 6VRH = 60 h.p. at 915 r.p.m.
One type 5VPH = 90 h.p. at 900 r.p.m.

Available at low prices unused and refurbished as new with or without original packing cases. Apply: No. 171, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

AGENCY APPOINTMENT

FIRM of Engineers and Contractors supplying heavy steel products to Gasworks desire to make an Agency Appointment for Scotland. Applications are invited from persons or firms who already have contact with the Gas Industry in Scotland and who also can incorporate such an appointment with existing Agency arrangements.—Apply : No. 170, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

MISCELLANEOUS

FACTS ON THE PLATE

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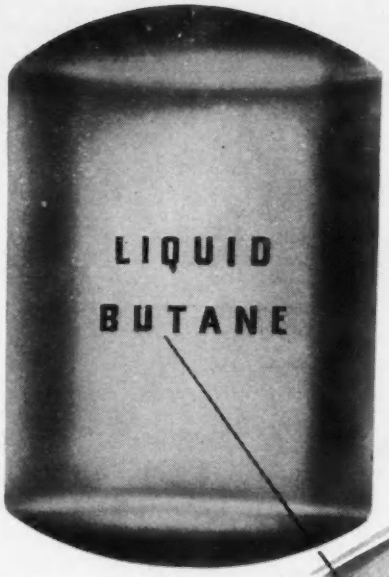

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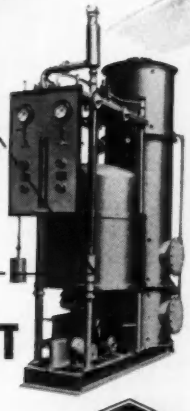

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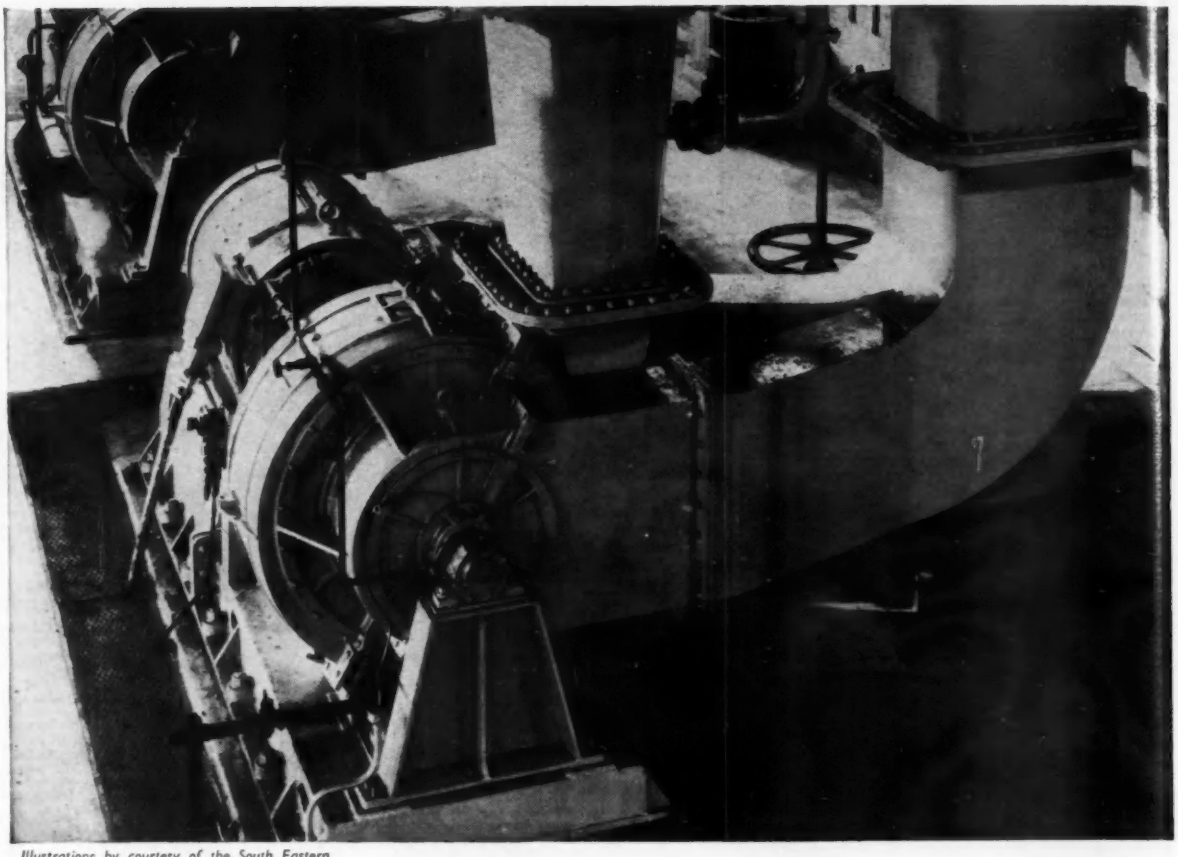
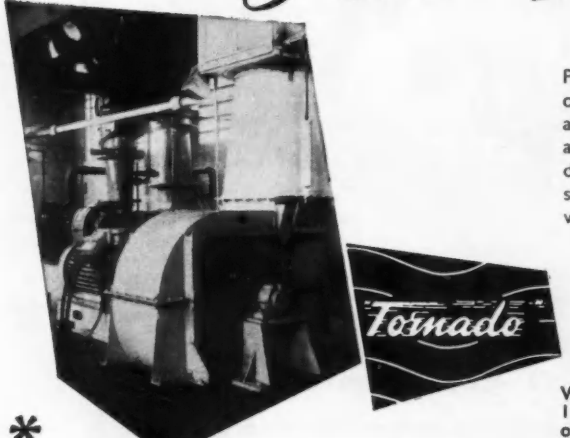


Illustrations by courtesy of the South Eastern Gas Board and Messrs. Humphreys & Glasgow Ltd.

Gas Boosting *



Part of an installation at the East Greenwich Gas Works for the supply of South London's gas are the "TORNADO" gas boosters illustrated above. Each is capable of shifting over a million cubic feet of producer gas an hour, and each was supplied with cast iron gas tight casings with detachable segments for easy servicing, stainless steel impeller and shaft, self aligning roller bearings and flexible couplings. One of the boosters was arranged for motor drive and the other for steam turbine.

*

LARGE ILLUSTRATION: *42" type 9 double width double inlet gas boosters.*

DUTY: 1,095,000 cu. ft. per hour producer gas at 104°F. saturated, giving 28" w.g. differential over inlet and outlet connections taking 138 H.P.

SMALL ILLUSTRATION: *40" type 15 air blowers.*

DUTY:	Closed outlet	Delivery
Air quantity	nil	12830 c.f.m.
Speed r.p.m.	1480	1475
Static pressure	15.8" w.g.	13" w.g.
Power absorbed	13 B.H.P.	39 B.H.P.

FAN ENGINEERING AND INDUSTRIAL GAS EQUIPMENT

We are manufacturing gas boosters which cover a range of from 5,000 to 1,500,000 cubic feet per hour, and if you are concerned with the movement of air or gas, ask us to send you Publication No. 5/7, a survey of the standard range of "TORNADO" high pressure blowing and exhausting fans.

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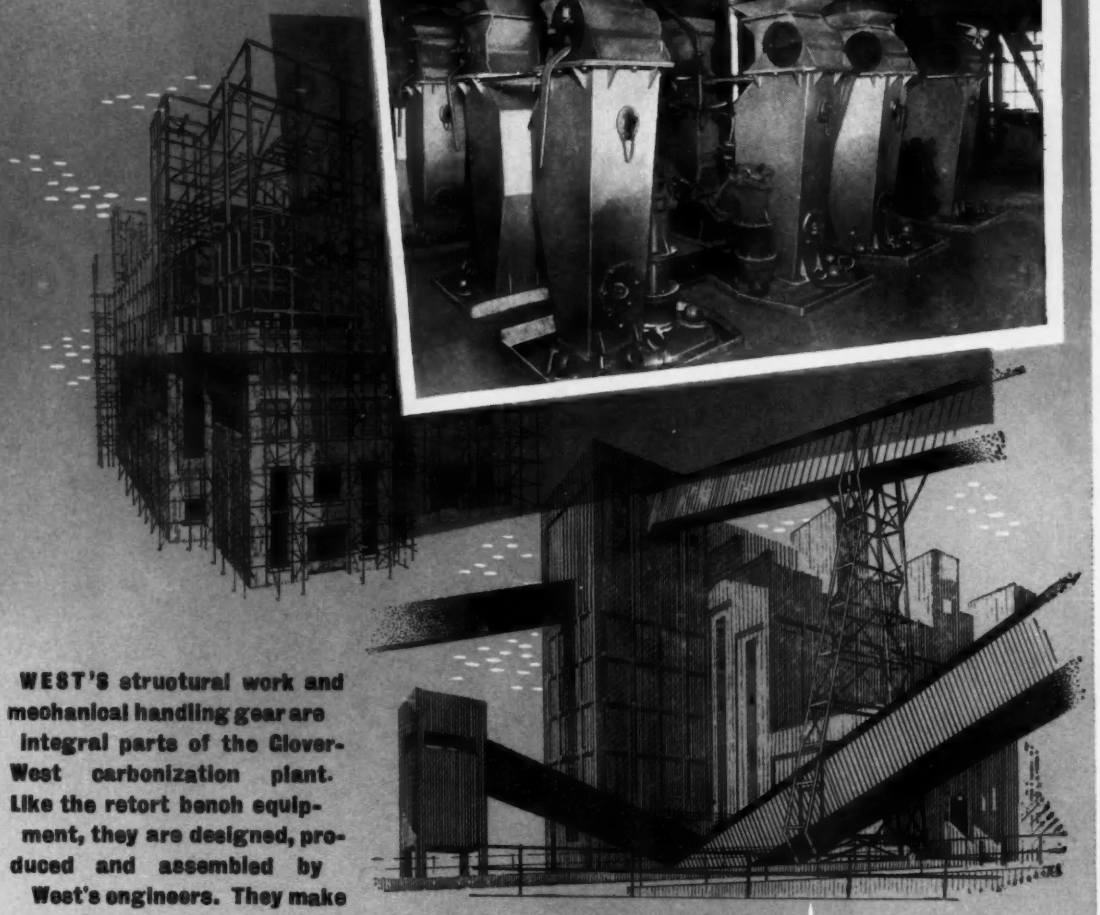
Behind the Retorts



WEST'S structural work and mechanical handling gear are integral parts of the Glover-West carbonization plant. Like the retort bench equipment, they are designed, produced and assembled by West's engineers. They make an important contribution to the efficiency of the system. In addition, they provide practical evidence of the availability to the gas industry of an experienced service in the structural and mechanical handling fields.

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